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POST HARVEST CROP PROCESSING

IMPORTANCE OF CURBING CROP LOSSES STRESSED

Moscow ZAKUPKI SEL'SKOKHOZYAYSTVENNYKH PRODUKTOV in Russian No 7, Jul 80
pp 5-7

[Article: "A Reliable Barrier Against Field Crop Losses"]

[Text] The agrarian policies of the party, prepared during the March (1965) Plenum of the CPSU Central Committee and further developed during subsequent congresses and plenums of the CPSU Central Committee, have made it possible to realize significant advances in the economic and social development of the country's agriculture.

The agricultural workers, under the direction of party and Soviet organs, by solving the strategic task of supplying the country with food goods and industry with agricultural raw materials, are increasing the production of farming products. This is apparent in the following table.

Average Annual Gross Yield in Principal Farming Products at All Categories of Farms, in millions of tons

	1959-1965	1971-1977	1978	1979
Grain	128.1	189.6	237.2	179.0
Raw cotton	4.84	7.91	8.50	9.16
Sugar beets (commerical)	56.8	81.9	93.8	76.0
Sunflowers	4.62	5.86	5.31	5.37
Potatoes	82.7	88.2	85.9	90.3
Vegetables	16.5	23.3	26.3	25.8

The Soviet Union is the largest producer of many valuable agricultural crops. It occupies first place throughout the world in the gross output of wheat, rye, barley, potatoes, sugar beets, flax and sunflowers.

Grain is the foundation for the country's food and forage base and for the rural economy. Thus the farmers are obligated to do everything possible to ensure the production of a maximum amount of grain. Moreover, in addition to covering last year's shortfall in grain, they must take a new step forward.

Even greater achievements can be realized in the production of field products if a reliable barrier is erected against losses during the stages of growth, harvesting, post-harvest processing, transporting, storage and processing. It is known that each year a considerable portion of the harvested grain, sunflowers, potatoes, vegetables, fruit and other farming products fail to reach the consumers owing to losses or reductions in the quality of these products.

Within the agricultural, procurement and trade systems and in the branches of the processing industry, there are complexes of scientifically sound organizational-technical measures which can be used for fully eliminating such losses or reducing them to a minimum.

For example, the cropping power and quality of agricultural crops are lowered by plant pests and diseases and also by the incorrect selection of the harvesting periods and methods. Thus the proper tending of plants, the correct organization of protection for them against pests and diseases, using agrotechnical, biological and chemical measures, and also the carrying out of the harvest work during the best periods, make it possible each year to prevent a shortfall in crops amounting to tens of millions of tons.

According to data supplied by scientists, the harvesting of grain crops 10 days after they have attained full ripeness results in a loss of 9-22 percent of the crop and a further delay of another 10 days -- a loss of up to 31 percent. In addition to direct losses of grain, a deterioration is often noted in the quality of the grain. The elimination of these shortcomings alone will make it possible, for the country as a whole, to obtain hundreds of thousands of additional tons of bread and forage grain.

The incorrect harvesting (mowing in the direction of a slope) of lodged grain crops can result in a crop loss of up to 10 percent.

At the present time, as is known, the grain crops are being harvested using one of two methods -- two-stage harvesting or direct combining -- depending upon the degree of ripeness, the moisture content of the grain, weather conditions, uniformity of the grass stand and weediness of the fields. The kolkhoz and sovkhoz specialists and leaders are employing a differentiated approach in determining the harvest methods and periods.

The two-stage harvesting method is usually employed during the stage of waxy ripeness when the grain has a moisture content of 35-40 percent and direct combining -- average moisture content of 17-18 percent. During dry weather the two-stage harvesting method is used when the grain crops are in the waxy ripeness stage and direct combining -- during the stage of complete technical ripeness. The two-stage harvesting method possesses an advantage over direct combining in those instances where the grass stands are irregular, very weedy or lodged.

It bears mentioning that the grain combines being produced by industry are not sufficiently airtight and, in order to prevent grain losses during

thrashing, they must be adjusted and hermetically sealed in a thorough manner prior to the commencement of the harvest work on the farms. If this is not done, grain losses will inevitably occur during the thrashing work.

It has been estimated that if, for a grain cropping power of 20-25 quintals per hectare, a combine leaves 4-5 ears unthreshed per square meter, a grain loss of 40-50 kilograms of grain per hectare will occur; if one grain per ear is left unthreshed -- a loss of 160 kilograms.

One serious problem is that of the absence of special rice harvesting units. The Sibiryak or Kolos grain combines used for thrashing rice, even after being appropriately re-equipped, are unable to thrash the rice completely. Even following 2-3 repeated thrashings of the same wind-row, up to 1 ton of highly valuable grain is lost per hectare.

Violations of the grain harvesting rules, in addition to losses, bring about a sharp reduction in the quality of the grain. For example, the harvesting and thrashing of millet, buckwheat, rice and sunflowers, using combines having defective attachments, result in the hulling and crushing of the grain and seed, which in turn bring about a sharp reduction in the yield and assortment for the groats and oil.

Some farms, for various reasons, commence their rice harvesting work considerably earlier than the onset of the stage of complete ripeness for the rice. As a result, the green grains, during grinding in connection with the processing into groats, are transformed into waste products and this lowers sharply the yield of groats. The farms sustain considerable material losses, since their poor quality rice does not fetch the high price (300-330 rubles per ton) paid for quality-standardized rice.

For example, the farms in Kzyl-Ordinskaya Oblast, as a result of failure to observe the best harvesting periods and thrashing regimes, sold 132,000 tons of rice grain from their 1979 crop to the state, or 42 percent of their overall quantity of rice-grain, having a raised grain impurity level of from 15 to 35 percent, caused by underdeveloped and damaged grains. The State Procurement Inspection took no action aimed at preventing this from occurring.

Prior to being used for the intended purpose, the high yield of grain that was grown and harvested without losses must be fully preserved.

For carrying out the post-harvest processing and for ensuring the preservation of the freshly harvested grain, the thrashing floors of kolkhozes and sovkhoses must be equipped with grain drying and grain cleaning machines and have a hard surface platform so inclined that the rain and surface water do not dampen the clamps. The grain delivered to thrashing floors from combines, especially that having a raised moisture content and high level of weediness, should be immediately cleaned, dried and stored in covered facilities.

The quality of grain that is not cleaned or dried, especially if there is a high moisture content or high level of weediness, decreases after 2-3 days and sometimes even within a few hours.

Inspections conducted by state inspections in 1979 revealed that the freshly harvested grain on individual farms in Volgogradskaya, Voronezhskaya, Kirovogradskaya, Nikolayevskaya, Poltavskaya and certain other oblasts is not always subjected to the required post-harvest processing and, as a result, self-heating and germination of the grain take place.

During the crop harvesting period, scattered grain is often noted lying on country roads and highways in some oblasts. This is completely intolerable.

Before the grain is transported, the bodies of the motor vehicles and towed trucks should be equipped with tarpaulins or covers and the roads and access routes repaired and leveled off.

In the campaign to reduce grain losses during transport operations, a great contribution is being made by those workers attached to state automobile inspections and people's control groups. For example, in addition to exercising control over the roads in Omskaya Oblast during 1979, the GAI [state automobile inspections] and people's controllers inspected the motor vehicles upon arriving at grain receiving enterprises and they forbid the loading of grain into non-equipped vehicle bodies.

In the interest of intensifying the campaign against grain losses during rail shipments, the USSR Ministry of Procurements tasked the state automobile inspections and state grain inspections with ensuring that the grain receiving and grain processing enterprises observe the procedures laid down for the inspection and loading of freight cars with grain and other products. The enterprise leaders must review all incidents involving grain shortages or excesses during shipments and, upon uncovering violations of the established procedures, submit recommendations to the leaders of the enterprises and grain products administrations with regard to holding the guilty parties accountable for their actions.

In order to ensure the quantitative and qualitative preservation of state grain resources, the material-technical base of the grain receiving and processing enterprises is undergoing constant development and improvement -- the elevator capacities and grain cleaning and drying capabilities are being increased and the grain acceptance and processing operations are being mechanized.

At the same time, it bears mentioning that a shortage of elevator-storehouse capacities and drying capabilities, for the storing and processing of all grain continuously upon delivery, is being experienced at many grain receiving enterprises, especially during highly productive years. As a result, the grain must be stored outdoors. Such storage, even in properly formed clamps, leads to natural losses that exceed by 2.4 times the grain losses which occur in the case of elevator storage.

An effective means for preventing a deterioration in the quality of damp and moist grain and also grain having a high temperature is that of forced ventilation. The correct and timely use of forced ventilation makes it possible to eliminate self-warming rapidly, to prevent the development of mould and grain pests and to accelerate the post-harvest ripening of the grain.

Enterprises within the USSR Ministry of Procurements system have a complex of measures at their disposal which makes it possible to ensure complete quantitative and qualitative preservation of the grain, the only requirement being the correct, timely and effective use of these measures.

Inspections carried out by state grain inspections and state procurement inspections on the quality and preservation of state grain resources at grain receiving and processing enterprises reveal that the majority of the collectives are coping successfully with the principal task -- ensuring complete preservation of the grain. At the same time, at individual enterprises where state and technological discipline are at a low level, incidents involving a reduction in the quality of the grain and also grain losses have occurred -- shortfall in products compared to the established norm for output at mills, grain losses during rail shipments, loading of damp grain into elevator silos, shipping and delivery of grain to production without weighing and others.

In 1979, the greatest shortages in grain and in the products of grain processing occurred at enterprises of the RSFSR Ministry of Procurements and the procurements ministries for the Ukrainian SSR, the Kazakh SSR and the Belorussian SSR.

The principal cause of extensive grain losses in the form of shortages and output shortfalls, compared to the established output norms, is weak responsibility on the part of enterprise leaders with regard to the observance of state and technological discipline and insufficient exactingness towards these individuals by the appropriate grain products administrations and the union republic ministries of procurements.

The losses of potatoes, vegetables and fruit during the harvesting, transporting and storage stages are still quite considerable. In some instances, these losses amount to 20-25 percent of the gross yields. Such extensive losses are caused mainly by a low level of organization of the harvest operations, by defective equipment and by violations of the rules established for the transporting and storage of the products.

For example, potatoes bruise very easily when struck by or upon striking hard objects. The harvesting of potatoes by combines or conveyers that are covered by low quality rubber or have bare iron parts can result in 30 percent damage to the tubers. Potato tubers sustain additional damage when loaded and transported in bulk.

Great losses occur when products are moved over great distances by rail or river transport. This results mainly from the fact that in such instances the products are transported in bulk, in non-standard packaging, in non-refrigerated freight cars and at low speeds of movement. The products are enroute to their destinations for periods of 6-12 days or more. The transporting of potatoes and vegetables in containers makes it possible to reduce their losses by 14-15 percent, preserve their quality and lower labor expenditures by a factor of 2-2.5. However, owing to various reasons, this progressive method is still being employed to only a limited degree.

One important cause of reduced quality of goods and losses during transport operations is the fact that no decision has yet been reached concerning the responsibility of transport organizations for the preservation of the potatoes, vegetables and fruit while enroute to their new destinations. The transport organizations neither accept nor deliver these products according to weight and they are responsible for the quality of the goods only in those instances where disruptions occur in the established delivery schedules.

Considerable losses in potatoes, vegetables and fruit occur when they are stored on farms and at bases of the USSR Ministry of Trade and Tsentrosoyuz [Central Union of Consumers' Societies]. This derives from the fact that unsorted products are being placed in such storage, the rules for storage and for the temperature-moisture regime in the storehouses are not being observed and the sequence for the sale of the products depending upon their quality is not being followed. Some trade organizations, owing to the low quality of the products, are using for the purpose of cattle feed and industrial processing up to 10-12 percent of the potatoes and vegetables being received by them for storage for subsequent trade.

Individual farms and trade organizations are still continuing to place a portion of their potatoes and vegetables in prolonged storage in clamps. Science and practical experience have established the fact that in such instances the potato and vegetable losses amount to 25-30 percent.

The preservation of potatoes and vegetables is dependent to a considerable degree upon the culture of farming employed during their production. For example, the resistance of vegetables against diseases increases when adequate amounts of potassium and phosphorus are present in the soil, whereas an excess of nitrogen fertilizers, although it raises the cropping power of crops, lowers such resistance sharply and thus the crops are prematurely subjected to damage. The state inspections must exercise control over the observance of the technology employed for growing such products.

Inspections carried out by the state inspections of oblasts, krais, republics and the USSR Ministry of Procurements on the status of the preservation of potatoes, vegetables and fruit during the autumn and winter period of 1979-1980 revealed that these products are being stored in a satisfactory manner for the most part. At the same time, incidents of poor storage and low quality were observed in the case of a considerable

portion of the products at the Dushanbe Tadzhikplodoovoshch Association, the Kherson Glavplodoovoshchtorg, the Balakovo Gortorg [city trade administration] in Saratovskaya Oblast, the ORS [department of workers' supply] bases of the coal industry in Donetskaya Oblast, bases Nos. 1 and 3 of the Prunze Zagottorgplodoovoshch Association, the Bryansk Gorplodoovoshchtorg, the trade organizations in Kaluzhskaya Oblast, Krasnoyarskiy Kray and a number of organizations in the Ukrainian SSR, Belorussian SSR, Kazakh SSR and the Latvian SSR.

According to data supplied by scientific-research institutes, the losses in sugar beets stored in small uncovered piles out on the fields amount to more than 1 percent for each 24 hour period of storage. Considerable beet losses may occur owing to incomplete extraction of the root crops grown. In view of the fact that the combines employed for harvesting the beets are by no means technically perfect, they must be brought to a halt and cleaned once every 2 hours. If the cleaning is not carried out with this frequency, then the beet losses resulting from root crops being left in the ground may amount to 2 tons per hectare.

Beet losses also occur during storage and processing at the beet receiving and processing enterprises owing to a shortage of production capabilities, hard surface platforms and forced ventilation units. Thus a requirement exists at the present time for devoting special attention to the thorough preparation of these enterprises for the harvesting and processing season.

It is known that the principal indicator of beet quality is sugar content. However, this indicator can change depending upon the storage periods for the beets. A reduction in the sugar content of just one tenth of 1 percent, for the country as a whole, can result in a loss of 70,000 tons of sugar.

A more decisive campaign must be waged against raw cotton losses, especially during the harvest operations. As a result of the violations that occur on some farms with regard to the rules established for preparing the cotton fields for harvesting and the periods and technology for carrying out the harvest work, considerable losses occur in the raw cotton and its quality is lowered. In particular, such violations occur during machine harvesting operations, when up to 8-10 percent of the material falls to the ground and becomes contaminated. This cotton is subsequently gathered up manually. As a result, an increase takes place in the labor expenditures for the manual harvesting work and the quality of the raw materials obtained decreases sharply; in the majority of instances the procurement points accept it as being of fourth grade quality and thus the farms sustain considerable material losses.

The material and technical base of the cotton procurement points is being further developed and improved and this is making it possible to improve somewhat the quality of the raw cotton cleaning and drying operations and to ensure better preservation of the cotton. At the same time, it should be pointed out that a number of cotton procurement points lack drying and cleaning shops and forced ventilation units and this makes it difficult to ensure preservation of the cotton.

The most widespread causes of losses in flax products include: sowing of non-calibrated seed (with puny seed impurities), with sparse seedlings and weakly developed stalks being obtained as a result; sowing of seed having a high level of weediness and this tends to lower the quality and weight of the stock. Violations of the technology for the harvesting and spreading of flax-straw by combines lower the quality and increase the losses of stock.

An important reserve for reducing losses and raising the quality of the flax output is that of curtailing the flax harvesting and pulling periods from 3-4 weeks to 2, selling flax products to the state as straw, developing the material and technical base of the flax plants and absolute observance by them of the rules for the disposition and storage of flax raw materials.

The state inspections for procurements and the quality of agricultural products must carry out explanatory and organizational work on a daily basis with the leaders and specialists of kolkhozes and sovkhozes, trade, procurement and transport organizations and grain receiving and processing enterprises, with regard to creating a reliable barrier against losses in field products and to draw the proper conclusions from the instructions handed down by Comrade L.I. Brezhnev during the November (1978) Plenum of the CPSU Central Committee concerning the campaign against losses in agricultural output.

The state inspections for procurements and the quality of agricultural products must always recognize the fact that control should serve to strengthen state and technological discipline and raise the responsibility of all those officials upon whom the preservation of the products is dependent. In checking upon the preservation of agricultural products and in uncovering violations of the rules for storing them, violations which result in losses, the state procurement inspections and state grain inspections must not limit themselves to merely stating the facts, but rather they are obligated to undertake decisive measures aimed at eliminating those causes and conditions which give rise to mismanagement and losses in field products. The effectiveness of control, similar to economic activity, must be evaluated mainly on the basis of the final results.

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POST HARVEST CROP PROCESSING

PROBLEMS WITH USSR GRAIN ELEVATORS DISCUSSED

Moscow EKONOMICHESKAYA GAZETA in Russian No 26, Jun 80 p 17

[Article by G. Vasil'yev and N. Gerasimov: "Bottlenecks in Elevator Construction"]

[Text] This year it is planned to put elevator capacities for 3.83 million tons of grain into operation in the country as a whole. Almost one-tenth of them, or for 346,000 tons, are in Orenburgskaya Oblast alone. And this is no accident. In certain years this area sells the state 5.5-6 million tons of grain. But the base for receiving and storing it clearly does not correspond to the volumes of grain procurements. At the present time the oblast has elevator capacities for 1.3 million tons and storehouse capacities, for 2.5 million tons. And the rest of the grain must be stored in clamps, which leads to losses and deterioration of its quality. This is why the procurement workers are so impatiently awaiting the new elevators that were promised by the construction workers. What is the state of affairs in the construction of these facilities in Orenburgskaya Oblast and what are the problems and shortcomings here? A meeting of construction workers and the clients of the procurement enterprises that are being constructed held recently in Orenburg was devoted to these questions. It was organized by the Orenburgskaya CPSU Obkom and the EKONOMICHESKAYA GAZETA editorial staff. A report of this meeting is published below.

Disappointing Disruptions

With the assimilation of the virgin land in Orenburgskaya Oblast there was a considerable increase in the volume of grain procurements. Therefore in recent years, especially under the current five-year plan, a great deal of attention has been devoted here to strengthening the

material and technical base of grain receiving enterprises and constructing new elevators. The oblast Orenburgelevatorstroy Trust was created in 1976 and two new subdivisions were organized in the cities of Orenburg and Novotroitsk. A plant was also constructed for prefabricated elevator reinforced concrete, with a capacity of 35,000 cubic meters a year. The number of collectives working by the brigade contract method has increased appreciably in the Orenburgelevatorstroy Trust.

All this made it possible to increase the volumes of construction of procurement enterprises. During 4 years of the current five-year plan elevator capacities for 445,000 tons were put into operation. This is almost 60,000 tons more than during the entire Ninth Five-Year Plan.

But the assignment of the preceding 4 years was not fulfilled. Only last year were elevator capacities for 140,000 tons transferred to the plan for this year. These were facilities at stations: Station 20 of the Southern Ural Railroad, and the Sakmarskaya and Novosergiyevskaya. It is no accident that the first question at the meeting was about the state of affairs with the facilities that are being transferred. As the Orenburgelevatorstroy Trust's manager, Ye. Alashoyev, said, as of today they all have a high degree of construction readiness. But the equipment for last year's facilities has still not been delivered. Thus at Station 20 the lights, the equipment for the signalization, centralization and block system, and the elevator shaft have not been delivered. And the situation with respect to equipment is no better at the facilities for the Novosergiyevskaya and Sakmarskaya stations.

On the whole for the startup facilities for 1980, with a need for equipment for 2,100 positions, equipment for 755 positions was not delivered and there are not even orders for 276 of these, including equipment and cable for signalization, centralization and block systems for 210 positions. Why are the facilities so poorly supplied with equipment? "The suppliers let us down -- the plants of the USSR Ministry of Procurements, the Ministry of Machine Building for Light and the Food Industry and the Ministry of Railways," answered the chief of the oblast administration for grain products, A. Romanov.

"This is really the case," said the chief of the construction division of the CPSU Obkom, P. Ishutin. "But the clients themselves and the managers of the oblast grain products administration do not always display the necessary adherence to principles in this matter and are not demanding enough of the supplies."

The chief of the Orenburg installation and adjustment administration of the Spetselevatormel'montazh Trust, N. Kovtun, noted that the client sometimes does not even know about the existence of equipment at this own bases. Thus at base No 517 equipment that is extremely necessary for the construction project has been lying around for several months.

It is not just that the equipment comes to the facilities very late, but also it is frequently of poor quality. Participants in the meeting made an especially large number of complaints against the Biyak Prodmash Association of the Ministry of Machine Building for Light and the Food Industry, which delivers incomplete sets of grain drying equipment that deviate from the established sizes. As a result, it is necessary to spend a good deal of time completing them on the spot. This was discussed by the deputy chief of the RSPSR Glavelevatorspeststroy, G. Nesterov, and the director of the Sakmarskiy elevator, Yu. Savenkov.

The construction workers have also been disappointed by the suppliers of reinforced concrete structures -- plants of the RSPSR Ministry of Rural Construction. During only 5 months they have failed to deliver 4,300 cubic meters of reinforced concrete to startup facilities. These violations impede the course of construction work and disrupt the release of the facilities for the installation of equipment.

From Design to Object

The time periods and quality of construction depend to no small degree on how good the planning and estimate documentation is. And the documentation that is provided by the Kuybyshev Promzernoprojekt Institute is far from perfect. All participants in the meeting agreed unanimously on this. They gave many examples of the poor quality of the designs.

Here is one of them. For the Perevolotskiy elevator, which was included in the plan for last year, a design was developed without taking into account existing structures. As a result, the beginning of the construction of the elevator was postponed, but the client still ended up forfeiting 42,000 rubles to the general contractor. The institute planned the construction of the silage facilities at the Saraktashskiy elevator on the spot adjacent to the cable.

Moreover, the plans frequently include obsolete equipment. Thus the motor vehicle unloaders are intended only for small trucks. And they forget the fact that the capacities of the trucks have increased appreciably in recent years.

The Kuybyshev Promzernoprojekt institute is in no hurry to submit planning estimates for surplus facilities either. And yet such delay disturbs the flow of the technological process of construction and leads to a reduction of the volumes of work, underloading of construction subdivisions and, in the final analysis a reduction of the startup of elevators in recent years.

Such violations are explained largely by the existing imperfect policy for financing planning work. Now it is carried out in parts, for the fulfillment of some individual stage of the work. Therefore the planners are in no great hurry to submit planning estimates for the entire project. This

confirms once again the indisputable fact that it is necessary to change over more rapidly to the new policy presented in the decree of the party and government concerning improvement of the economic mechanism. It consists in keeping accounts between clients and planning-research organizations for the completeness of plans that have been finished and used by the client for the construction of enterprises, startup complexes, sections and facilities.

Many difficulties arise because of omissions in construction planning. As of today the RSFSR Ministry of Procurements has not established the startup complexes that include elevators in Novosergiyevka, Akbulak or Shil'da. But how is it possible to construct enterprises smoothly and release them promptly if one is unaware of the complete list of facilities that must be put into operation. One cannot but understand the indignation of the chiefs of the construction trains E-47, P. Penyaskin, and E-38, M. Rakhmatullin, who disclosed these facts.

In addition to everything else, the annual volumes of work are planned without taking into account the actual capacities of the subdivisions. Thus the construction train E-25 which was created with a great deal of difficulty in 1971 at the Rudnyy Klad station was eliminated in 1978 because of a lack of the necessary volume of work. And the expansion of the elevator at the Rudnyy Klad station with a volume of work of 1.2 million rubles was planned again for 1981.

The housing situation for the workers is especially critical. This was noted in the speeches of the deputy chief of the construction division of the party obkom, B. Mironov, the director of the elevator under construction at Station 20, V. Grechushkin, and the director of the Novosergiyevka elevator, M. Kozub. Its construction was not envisioned in the plans. And although the RSFSR Gosplan and the union and Russian ministries of procurements know about this, no concrete steps have been taken yet in this area. This usually leads to an extremely lamentable situation. The enterprise is put into operation but is not staffed with personnel. This can also happen at startup elevators in Orenburgskaya Oblast. For example, at the elevator at Station 20 there are now only four workers and more than 100 of them are needed.

If Efforts Are Combined

But still, without forgetting about the shortcomings in the supplies of the facilities with equipment and reinforced concrete structures or the omissions and incomplete work of planning organizations, matters at startup facilities would be considerably better if the client, the general contractor, the subcontractors and the planning institutes more cooperatively and in closer contact, and solved all problems through common efforts. And, as the secretary of the Orenburgskaya CPSU Obkom, S. Chekasin, noted in his speech, this has not been achieved so far. The partners do not display the necessary adherence to principles with respect to one another,

and material sanctions are rarely applied for violations of contractual commitments. And this in the final analysis has a negative effect on the course of construction work.

At a number of facilities labor organization is still poor, there is slipshod work and irregularity during the assembly of the walls of the silos. One of the reasons for this, in the words of the director of the elevator under construction at Iletsk, Yu. Vakhnin, is the fact that not enough attention is being paid to training workers and improving their skills, or to strengthening labor discipline.

Construction workers still frequently work sluggishly and take a long time to get into the swing of things. For example, only half of the foundation slabs have been laid for the construction of the elevators in Akbulak and Saraktash, and the contractors have not even started on the other facilities.

The work of subcontracting organizations was also criticized at the meeting: the oblast rural construction administration and the trusts of Orenburgtransstroy and Orenburgsel'elektroset'stroy, which are not promptly fulfilling their plans.

In conclusion, the secretary of the party obkom, S. Chekasin, said that measures are now being taken to accelerate the course and improve the quality of the construction of elevators. Party raykoms have been instructed to pay more attention to the construction of procurement enterprises; to step up the work of the rayon staffs for coordinating the work of organizations participating in the construction of grain receiving enterprises; and to develop effective socialist competition among subdivisions, sections and brigades. Special attention was devoted to increasing the moral and material incentives for the final result -- prompt startup of elevator capacities.

Participants in the meeting made assurances that they would exert all efforts to eliminate the shortcomings in the organization of construction work so that startup elevators would be able to participate in next year's harvest. One hopes that the leaders of the RSFSR Ministry of Rural Construction, the RSFSR Ministry of Procurements, the plants that supply equipment and reinforced concrete structures and planners, in turn, will do everything in their power to provide for continuous employment of elevator construction workers.

REQUIREMENT FOR HIGH QUALITY FEED FOR LIVESTOCK FARMS STRESSED

Moscow ZHIVOTNOVODSTVO in Russian No 6, Jun 80 pp 2-7

[Article by V. Onisovets: "For the Farms -- A Sufficiency of High Quality Feed"]

[Text] The past wintering period for the livestock produced many problems and concerns for the livestock workers in a number of regions throughout the country. The task of supplying the farms with adequate quantities of feed was adversely affected by last year's unfavorable weather conditions. A complex of measures had to be adopted aimed at protecting the animals and preventing a great reduction in the productivity of the cattle and poultry. It bears mentioning that this task was successfully fulfilled as a result of the selfless efforts of farm workers, machine operators and all rural workers. The state furnished a great amount of assistance in the form of concentrated feed to those farms which suffered from drought conditions.

However, owing to a shortage of feed during the winter period, the productivity of the animals decreased in many regions of the Ukraine, Belorussia, Lithuania, central region, central chernozem zone, the Volga region and in some other regions of the Russian Federation. Reductions were noted in these areas in the milk yields and in the weight increases of the cattle during fattening operations. This requires that the agricultural organs, the farm leaders and specialists and all livestock workers devote increased attention to the problem of organizing summer maintenance for the livestock and to ensuring that full use is made of the great opportunities that are available during this period for raising to a considerable degree the dairy and meat productivity of the animals.

Ensuring the efficient use of the grass stands of meadows and other feed lands, the development of creative initiative and an active labor rivalry among the livestock raisers and the creation of appropriate conditions for them for carrying out highly productive work during the pasture maintenance period for the livestock -- these factors constitute the most urgent task confronting each kolkhoz and sovkhos at the present time and at the same time they represent a decisive condition for eliminating more rapidly the

backwardness of some farms and for obtaining as much meat, milk and other products as possible, based upon the use of cheap summer feed. In order to ensure the fulfillment of this task, all organizational work should be concentrated on these factors.

The livestock workers and specialists are quite aware that the principal conditions for achieving steady and stable development for animal husbandry include strengthening the feed base in every possible way and ensuring that the farms are fully supplied with high quality feed.

"Everything that we wish to obtain from animal husbandry" stated Comrade L.I. Brezhnev during a report delivered before the July (1978) Plenum of the CPSU Central Committee, "--more meat, milk and other products -- all of these items are in the final analysis dependent upon sufficient quantities of diverse types of high quality feed being available." The CPSU Central Committee has assigned a most urgent task to the party, soviet and agricultural organs and to kolkhoz and sovkhoz leaders -- that of creating during the next few years, on each farm and at each interfarm enterprise, a reliable and strong feed base for animal husbandry.

As is known, the Plenum of the CPSU Central Committee has approved large-scale special purpose programs for increasing the production of all types of feed and raising their quality, for the technical retooling of feed production operations at kolkhozes and sovkhozes and other agricultural enterprises, for further developing the mixed feed industry and also for ensuring an accelerated build-up in the capabilities for producing high protein additives at enterprises of the microbiological industry.

The preparation of complex plans for the development of feed production during the Eleventh Five-Year Plan is nearing completion at the present time at the kolkhozes, sovkhozes and other agricultural enterprises. The measures outlined on the farms must serve as the foundation for the overall complex programs for a rayon, oblast or republic and they must take into account the need for ensuring that sufficient feed is made available both for public animal husbandry and for the privately owned livestock of kolkhoz members, sovkhoz workers and other rural inhabitants.

The party organizations, agricultural organs and kolkhozes and sovkhozes in Kiyevskaya Oblast have accumulated a great amount of experience in the preparation and implementation of complex programs in behalf of the development of animal husbandry. Here feed production is developing at a rapid rate of speed. Whereas during the years of the Ninth and Tenth Five-Year Plans the numbers of all types of livestock and poultry increased by a factor of 1.5, the production of feed increased by a factor of 1.8. This is making it possible for the livestock raisers in Kiyevskaya Oblast to fulfill and over-fulfill successfully their high obligations for increasing the production and procurements of meat and milk, obligations which they undertook in a letter addressed to the General Secretary of the CPSU Central Committee and the Chairman of the Presidium of the USSR Supreme Soviet Comrade L.I. Brezhnev.

The farms in Vinnitskaya Oblast have accumulated positive experience in the preparation of a complex program for the development of animal husbandry. The agricultural workers in this oblast, in collaboration with scientific institutes and based upon the experience of their leading farms, have resolved during the next few years to raise the feed yield per hectare of forage crop planting to 48-50 quintals of feed units and to raise the feed capability of public animal husbandry to 37-38 quintals of feed units per nominal head. This will make it possible to increase considerably the production and sale of livestock products to the state.

The production of feed on farms throughout the oblast is becoming more and more specialized with each passing year: feed crop rotation plans are being mastered and specialized and well equipped branches, brigades and teams for tending the forage crops, haying lands and pastures and also interfarm detachments for the procurement of feed are being created. New positions have been established on the farms: deputy chairman of a kolkhoz, sovkhoz director for feed and also feed crop specialists. Similar programs have been developed and are being implemented in Khar'kovskaya, Gomel'skaya, Leningradskaya and many other oblasts. The task of the specialists and leaders of kolkhozes, sovkhozes and agricultural organs consists of accelerating the completion of the complex programs for the further development and intensification of feed production on each farm, with use being made of all new and leading developments and with every attempt being made to ensure the unconditional fulfillment of the plans for increasing the production and raising the quality of all feed procured.

During the past few years, the implementation of the measures planned for intensifying feed production has enabled many farms to improve noticeably their ability to supply the smaller farms with feed. During the years of the Tenth Five-Year Plan, the production of coarse and succulent feeds increased by almost 20 percent in the public sector of farms and some positive results were achieved in improving the quality of the hay, haylage and silage procured.

However, the feed shortage continues to be the principal obstacle with regard to the further development of animal husbandry. As mentioned during the July (1978) Plenum of the CPSU Central Committee and in the recently adopted decree of the party's Central Committee and the USSR Council of Ministers entitled "Additional Measures for Increasing the Production of Coarse and Succulent Feeds During 1980 and Raising Their Quality," the production volumes for coarse and succulent feeds are not satisfying the increasing requirements of animal husbandry.

In recent years, farms in the RSFSR, the Ukrainian SSR, Belorussian SSR, Lithuanian SSR and Latvian SSR have tolerated considerable under-fulfillment of their feed procurement plans. In particular, serious shortcomings occurred in the organization of feed production operations on many farms in the Mordovian ASSR, the Buryat ASSR and in Astrakhanskaya, Penzenskaya,

Novgorodskaya, Pskovskaya, Smolenskaya, Ryazanskaya, Orlovskaya, Lipetskaya, Kurskaya, Ternopol'skaya, Sumskaya, Khmel'nitskaya and some other oblasts, where the average annual feed procurement volumes during the current five-year plan either fell below or increased only negligibly above the figures for the Ninth Five-Year Plan.

Primitive methods and an obsolete technology are still being employed in a number of areas for carrying out feed production operations. The harvesting of grasses and silage crops is being carried out on a tardy basis, the rules for the preparation of hay, haylage and silage are not being followed and proper attention is not being given to the construction of feed storehouses. As a result, the quality of a considerable portion of the feed being procured continues to remain low. In some rayons a reduction has taken place in the work volumes associated with improving the natural feed lands and creating highly productive irrigated haying lands and pastures.

In the mentioned decree of the CPSU Central Committee and the USSR Council of Ministers, the attention of the party, soviet and agricultural organs was once again drawn to the fact that the shortage in coarse and succulent feeds is one of the principal reasons for the low productivity of public animal husbandry and that it results in a considerable over-expenditure of grain, a situation which cannot be tolerated in the future.

The rural party organizations, local soviet and agricultural organs, kolkhozes and sovkhozes have been assigned a very important task -- during 1980 a considerable increase must be achieved in the production of hay, silage, haylage, feed root crops and other feeds and the quality of these substances must be raised. Specific tasks have been established with regard to the procurement volumes for coarse and succulent feeds at kolkhozes, sovkhozes and other state agricultural enterprises. The recommendation has been made to have all of the union republics create the required insurance funds of coarse feeds for animal husbandry. The carrying out of the plans and established tasks for increasing the production of diverse types of feed this year is a direct obligation and honorable responsibility of the farm leaders and specialists and all rural workers.

A task of priority importance is that of increasing the procurements of high quality hay. In conformity with the plans of farms, the production of hay this year must be increased to a minimum of 77 million tons, or almost 5 million more tons than was obtained on the average during the 1976-1978 period. The overall procurements of hay at all categories of farms must amount to almost 97 million tons.

Just as in previous years, the principal source for hay procurements is sowings of perennial grasses. The areas used in past years for the sowing of alfalfa, clover and grass-legume mixtures of perennial grasses, for the purpose of procuring hay, are being increased this year by almost 1 million hectares. On farms in the Ukrainian SSR, the plans call for a average of 38-40 quintals of hay to be obtained from each hectare on these areas, in the Moldavian and Azerbaijan SSR's -- 48-52 quintals, in the Tadzhik SSR -- 70 quintals and in the Uzbek SSR -- 102 quintals.

The sowings of bare and cover perennial grasses have also been increased this year by almost 1 million hectares. This will promote a further strengthening of the base for the production of high quality feed. At the present time, importance is being attached on each farm to the proper tending of the perennial grass plantings and to watering the irrigated areas and mowing the grass stands in a timely manner, so as to ensure the use of the productive potential of these lands for the purpose of augmenting the feed reserves of the farms.

The July (1978) Plenum of the CPSU Central Committee stressed in particular the need for utilizing irrigated and drained lands more efficiently in the production of grain and feed. Considerable resources are being invested in land reclamation, a sufficiently powerful production base has been created and the ranks of specialists have grown. This authorizes the agricultural and aquicultural organs to require the leaders and specialists of kolkhozes and sovkhozes to obtain high yields of products from each hectare of reclaimed land.

Last year, more than 8 million hectares of reclaimed land on arable land and more than 6 million hectares of meadow and pasture land were set aside for forage crop sowings. During the past two five-year plans the production of forage on these lands almost doubled and it presently amounts to approximately one third of the overall volume of all coarse and succulent feed procured. The productivity of feed lands on irrigated lands, during the period following the March (1965) Plenum of the CPSU Central Committee, increased by a factor of 1.7 and on drained lands -- by a factor of 2.1.

The experience of many rayons and the best farms reveals that from reclaimed lands it is possible to obtain 50-65 quintals of feed units per hectare, perennial grass hay -- 100-120 quintals, feed root crops -- 800-1,000, corn for silage -- 400-500 quintals per hectare. In 1979 the cropping power of perennial grasses for hay under irrigation conditions in the Uzbek SSR amounted to 127 quintals per hectare from an area of 77,800 hectares.

On many farms, the alfalfa hay yield from irrigated areas exceeds 150 quintals per hectare. The Komsomol'skiy Sovkhoz in Skadovskiy Rayon, Khersonskaya Oblast obtains 1,200-1,300 quintals of feed root crops per hectare under irrigation conditions. The farms in Krymskaya Oblast are obtaining 500-550 quintals of corn fodder per hectare. The Zolotarevskiy Sovkhoz in Rostovskaya Oblast is obtaining more than 700 quintals of perennial grass fodder from 1 hectare. In Stavropol'skiy Kray, 65-68 quintals of feed units are being obtained from each hectare of forage crops.

Many farms in Moldavia, Kirgizia, Tadzhikistan, the Kalmyk ASSR and in Leningrad, Vologodskaya, Kiyevskaya, Alma-Atinskaya and other oblasts are obtaining high yields of forage crops and grasses from reclaimed lands. Moreover, as borne out by the practice of leading kolkhozes and sovkhozes, it is precisely forage crop sowings and irrigated haying and pasture lands that produce the greatest return on resources invested in the reclamation of land.

Reclaimed lands having dual control over the water regime truly represent a gold fund for obtaining guaranteed forage crop yields during any year. Thus a great amount of responsibility must be displayed in connection with the use of such land and every attempt must be made to ensure the use on them of the latest achievements of science and leading practice and to obtain a maximum yield of feed from each hectare. Unfortunately, this is by no means being carried out in all areas. Quite often, the yields obtained under irrigation conditions differ very little from the results of non-irrigation farming. In the Georgian SSR, the Azerbaijan SSR and the Dagestan ASSR, many farms are obtaining only 80-90 quintals of corn fodder and 35-45 quintals of perennial grass hay per hectare from irrigated tracts.

In a number of regions, the reclaimed lands are not being employed for haying and pasture purposes in a sufficiently efficient manner. There are more than 1 million hectares of such land on irrigated tracts, but radical improvements have not been carried out on a good half of these areas and here the yield of meadow grass hay does not exceed 15 quintals per hectare, or 2-3 times lower than the yield which is possible with just average tending of these lands. There are almost 5 million hectares of haying and pasture areas on drained lands, but radical improvements have been carried out on only 1.5 million hectares.

An important condition for improving the use of reclaimed lands is that of improving the structure of the land under crops. In recent years, a great amount of work has been carried out in this regard. Today, perennial leguminous grasses account for almost two thirds of all feed grown under irrigation conditions. The plantings of corn for silage and grain, peas and soybeans are being expanded, but by no means have the reserves been exhausted. An efficient plan must be developed on each farm for introducing the achievements of science and leading experience into operations. Such achievements will bring about steady improvements in the efficiency of use of reclaimed lands.

In the interest of fulfilling this task, for example, the structure of plantings under irrigation in Saratovskaya Oblast was reviewed this year. Of 367,000 hectares of irrigated land, 286,000 hectares or 78 percent were set aside for forage crop use. The plantings of alfalfa were expanded considerably -- to 102,000 hectares and corn -- to 67,000 hectares. Seven newly created production associations will service almost 50,000 hectares; 705 sprinkling units have been turned over to them. Many farms throughout the oblast are competing to obtain 550-700 quintals of alfalfa fodder per hectare under irrigation conditions, to provide ample summer feed for the livestock and to create a reliable supply of hay and haylage for the forthcoming winter. Such opportunities are available to many farms having irrigated lands at their disposal and more complete use must be made of such land in the interest of intensifying the production of diverse types of feed.

An increase in the coefficient of use of irrigated lands is deserving of special attention; it can be achieved by means of repeated sowings of forage

crops. Last year, according to data furnished by the aquicultural organs, 650,000 hectares of irrigated land were set aside for use for repeated sowings, with 40 percent of this amount being on farms in the Ukrainian SSR. Fine experience in the use of repeated sowings of corn and various grass mixtures has been accumulated in the southern and southeastern regions of this republic. As a result, many farms here plan on obtaining 100 quintals or more of fodder per hectare this year. On farms in the Uzbek and Tadzhik SSR's, in addition to summer repeated sowings of corn, more extensive use is being made of late fall sowings of rape following the harvesting of cotton and grain corn. This makes it possible to obtain high quality feed that is well balanced in terms of protein as early as April.

However, it bears mentioning that in many regions of Uzbekistan only limited use is being made of the reserves that are available for increasing the production of feed by means of repeated and intermediate sowings. Only a negligible portion of the irrigated land made available following the harvesting of cotton and grain crops is being used for such plantings. At kolkhozes and sovkhoses in the Armenian SSR, for example, repeated sowings are being employed on 4,00-5,000 hectares and in the Kazakh SSR -- on 7,000 hectares. This year there must be a considerable expansion in the repeated sowings of forage crops in many republics and oblasts and this requires that early concern be displayed for the preparation of the land tracts, for the laying in of seed and fertilizers and for carrying out the sowing work during the best periods. All of this will enable the farms to supplement their feed resources noticeably and to obtain more animal husbandry products.

In many regions throughout the country, annual grasses occupy a large proportion of the land allocated for the production of hay, haylage and other feeds. In recent years, noticeable improvements have been realized in the structure of the annual grass mixtures. Instead of pure sowings of oats, barley and other crops, a majority of the farms are today sowing more productive grass-legume mixtures, which make it possible to obtain full-value feed of high quality. However, by no means is full use being made of the potential of these crops, especially with regard to raising their cropping power. In some oblasts of Kazakhstan, for example, the farms plan on obtaining only 10-12 quintals of annual grass hay per hectare, while in Uzbekistan 50 quintals and more of hay are being harvested per hectare from such areas. The annual grass yields on many farms in Kirgizia, a number of oblasts in the RSFSR and in the Ukraine continue to remain low. One of the most important conditions for strengthening the feed base is that of raising the efficiency of use of those lands occupied by annual grasses, which in many regions amount to more than one fourth of the feed fields.

The natural haying lands, which in a number of republics supply the principal bulk of the hay, require a considerably greater amount of concern. By carrying out soil improvement and other measures associated with raising the quality of the natural meadows, the farms in many regions of the Ukraine, Belorussia and the Baltic republics succeeded in raising the

cropping power of grasses cultivated on such lands to 20-25 quintals of hay per hectare. Many farms are obtaining 35-40 quintals of hay per hectare from areas on which radical improvements were carried out.

The productivity of natural feed lands is increasing especially rapidly in those regions where specialized interenterprise associations were created, associations which carried out a great amount of meadow improvement work. In Krasnokutskiy Rayon of Khar'kovskaya Oblast, for example, the kolkhozes turned over approximately 6,000 hectares of inundation meadows to such an association in 1976. Land reclamation work was carried out on this land, the grass stand was improved and fertilizers applied. Within a very brief period of time, the productivity of the haying lands here was raised by a factor of almost three and the plans for the next few years call for the feed yield from each hectare of meadow to be doubled once again.

Examples of a zealous attitude being displayed towards the natural haying and pasture lands are to be found in each republic and oblast and almost in every rayon. Unfortunately, we are still encountering incidents of badly neglected haying lands, which are overgrown with undergrowth or waterlogged, being located alongside highly productive meadows. In some regions, especially in Moscow, Kaluzhskaya, Yaroslavskaya, Ivanovskaya, Kostromskaya, Vologodskaya and other oblasts, large areas of natural haying land are being harvested very late; the grasses are allowed to stand too long and, as a result, they lose their nutritional qualities. Moreover, on some tracts, especially in the forests, the grasses are not being mowed whatsoever. Such mismanagement cannot be tolerated. The agricultural organs are obligated to raise their exactingness with regard to the farm leaders and specialists, in the interest of ensuring the efficient use of the natural haying and pasture lands. Moreover, they must provide them with assistance in organizing their personnel, achieving highly productive utilization of the hay harvesting equipment and attracting the aid of municipal supporting organizations. In short, they must organize the work in a manner such that the grasses are harvested rapidly and without losses and adequate quantities of hay and haylage procured.

The leaders and specialists of farms, agricultural organs and scientific institutes must devote a great amount of attention to observing the rules established for the procurement of feed and to organizing the extensive use of progressive technologies for preparing hay, haylage, silage, grass meal and grass cuttings.

Of decisive importance in this regard is the need for ensuring a maximum productivity for the feed harvesting machines, drying units and ventilation equipment and this is being achieved mainly in those areas where the farms are combining their efforts on a rayon scale and employing the Ipatovo method for the utilization of equipment, transport resources and labor resources.

During the haying period a greater amount of attention will have to be given to organizational measures, to mobilizing the entire rural population for

grass harvest, to utilizing more fully the assistance offered by the collectives of industrial enterprises and municipal supporting organizations and to making more extensive use of the proven practice of having Saturday and Sunday workers participate in procuring the feed. This year the task consists of ensuring that the grass of meadows and forest land, in swamps and along roadside strips, all vegetation possessing feed value, is harvested completely and in a timely manner.

Special concern should be displayed and a thrifty approach employed in connection with the use of grass dehydration equipment. The pool of drying equipment is increasing with each passing year. Prior to the beginning of this year's feed procurement season, it had reached 30,000 units, with each unit having a productivity of from 0.4 to 3 tons per hour. Last year the production of grass meal exceeded 6 million tons. At the present time, special attention must be given to raising the quality of the dehydrated feed and to use mainly leguminous grasses that were cut during the initial stage of budding for the production of vitamin meal. Importance is attached to producing this product in volumes which will fully satisfy the requirements of the state and interenterprise mixed feed industry and to fulfilling the internal plans for producing complete-ration granules and briquettes. At the same time, more complete use must be made of the capabilities of the drying equipment for the production of grass cuttings, as is being done by many farms in Moscow, Khar'kovskaya, Kiyevskaya and a number of other oblasts. According to data supplied by scientific institutes, artificially dried grass cuttings are not inferior to grass meal in terms of the principal nutrients and yet their production requires two times less fuel. Moreover, the vitamins in grass cuttings are less susceptible to oxidation and, it follows, they are more reliable and retain their valuable feed qualities for a longer period of time with no special processing or packaging required.

At the Ukrainka and Kutuzovka experimental farms of the Order of the Red Banner of Labor Scientific Research Institute of Animal Husbandry for the Forest-Steppe and Forest District of the Ukrainian SSR, a plan was developed for a simple grass cuttings storehouse. It is a light-weight type of shed, enclosed on the outside by a metal net. The cost of such an installation having a capacity of 800-900 tons is 6,000-8,000 rubles. The cuttings are placed under the shed in a layer 6-8 meters thick using a conventional blower. Following 6 months of storage, the feed is bright green in color and its vitamin content is higher than that for grass meal, which was stored for the same length of time in kraft-bags.

Today the kolkhozes and sovkhoses are able to employ forced ventilation on a broader scale for pressing their hay and drying their grasses. This year, no less than 7.2 million tons of hay must be dried using forced ventilation, or 2.8 times more than the volume for last year. In the case of pressed hay -- up to 23.6 million tons, compared to only 10.7 million tons last year. The active drying of loose and pressed hay should be carried out as a rule in special storehouses. More extensive use should be made of the

experience accumulated in the use of mobile ventilation units for drying hay in ricks, in hay storehouses and under sheds, as is being done on many farms in Krasnodarskiy Kray and in Moscow, Krymskaya and other oblasts.

For raising the quality indicators, great emphasis must be placed upon the preparation of haylage. The observance of the parameters for moisture content in haylage bulk (50-55 percent for selection), good crushing and isolation against air penetration -- an immutable rule for the preparation of haylage.

The introduction in all areas of progressive feed production technologies is directly associated with strengthening and developing the feed storage base. A great deal is being accomplished in this regard in conformity with the programs for intensifying the production of feed. During the past few years, storehouses have been erected at kolkhozes and sovkhozes capable of storing tens of millions of tons of haylage, silage and root crops. Deserving of special mention is the purposeful work being carried out in connection with the construction of feed storehouses in the Estonian SSR, Stavropol'skiy Kray and in Moscow, Leningrad, Dnepropetrovskaya, Kiyevskaya, Khar'kovskaya and a number of other oblasts. On farms in Estonia, for example, practically all of the feed is being stored in well equipped facilities, thus making it possible to retain their quality to a better degree. Unfortunately, this cannot be said for many regions in Moldavia and Kuybyshevskaya, Novosibirskaya and a number of other oblasts, where a considerable portion of the silage and haylage is still being placed in adapted trenches and a large portion of the hay is being stored outdoors. The construction of feed storehouses should be carried out on a scale which will make it possible to store as much feed as possible in standard facilities and, during the next 2-3 years, to fully satisfy the farm requirements for storehouses in which to store their haylage, hay, silage and dehydrated feed. All of the conditions are available for accomplishing this. Materials and long-term state credit over and above the capital investment volumes established for this year are being made available for the construction of feed storehouses.

An important operational trend with regard to raising the quality of the feed being procured is that of developing the use of chemical processes in feed production to the maximum possible degree and making more extensive use of chemical feed preservatives. This year there will be a considerable increase in the deliveries of such chemical preservatives as formic, propionic, acetic and benzoic acids and sodium pyrosulphite to the rural areas. The agricultural organs, jointly with the enterprises and organizations of Sel'khozkhimiya, must accelerate the creation of a storage base for the preservatives and master more rapidly the industrial methods for employing them in feed production. This will make it possible in future years to expand the preservation of fodder and to ensure the maximum retention of the nutrients in feed throughout the entire period that they are stored. At the same time, extensive use should be made of the experience available on many farms in the use of various biologically active

preparations (yeasts) for the ensiling of fodder and straw and also for the preparation of composite silage.

In the decrees of the CPSU Central Committee and the USSR Council of Ministers entitled "Additional Measures for Improving the Production of Coarse and Succulent Feed During 1980 and Raising Its Quality" and "Additional Measures for Ensuring the Harvesting of the Crops and the Procurement of Agricultural Products in 1980 and the Successful Wintering of the Livestock During the 1980/81 Period," special attention was focused on the carrying out of all work associated with the harvesting of forage crops and the procurement of feed during the best periods.

In conformity with these decrees, an extensive system of measures was developed for issuing incentives to feed production workers and to leaders and specialists for having increased the production or improved the quality of the feed being procured and also measures for raising the responsibility of leading workers at kolkhozes, sovkhoses and agricultural organs for the fulfillment of the plan for accumulating coarse and succulent feed.

During 1980, the directors of sovkhoses and other state agricultural enterprises are authorized to award bonuses to those workers who exceeded the feed production volume, compared to the average annual level achieved during the preceding 5 years. Funds amounting to 30 percent of the feed produced over and above the mentioned production level will be made available for this purpose, provided the feed was of a high quality. Permission has also been granted for additional payments to be made during 1980, for the timely and high quality carrying out of work, to workers engaged in the raising of forage crops, in the amounts specified in the decree of the CPSU Central Committee, the USSR Council of Ministers and the AUCCTU for work associated with the raising of row crops.

During 1980, an additional system of bonuses has been introduced for leading workers and specialists attached to sovkhoses and other state agricultural enterprises, for having achieved increases in the production of feed. The bonus amounts to up to 2 percent of the annual wage, according to the official wage rates, for each percent of increase in feed production obtained, compared to the average annual level achieved for the preceding 5 years but no more than two months salary for a worker. Moreover, the maximum bonus amounts will be paid out for procurements of high quality feed.

In the interest of raising the responsibility of leading workers for fulfilling the plans for accumulating feed, it has been established that in 1980 the awarding of full bonuses to these workers, based upon the results of their economic activity, will be carried out upon the condition that the plan for procuring internally produced feed was fulfilled.

In the case of non-fulfillment of the plan for procuring internally produced feed, the amount of the bonuses paid out to the leading workers and

specialists of sovkhozes and other state agricultural enterprises, sovkhoz trusts, agricultural production administrations and rayon executive committees and associations in agriculture is reduced in the established manner but to not less than 50 percent.

The governmental decree authorized the directors of sovkhozes and other state agricultural enterprises, during 1980, to issue (free of charge) in the form of an additional payment to workers engaged in the harvesting of hay, straw, in the procurement of silage and haylage and in the production of artificially dehydrated feed and to sell, based upon the planned production costs, to the workers of sovkhozes and other state agricultural enterprises having privately owned livestock, up to 10 percent of the hay and silage procured and up to 20 percent of the straw. Authority was also granted to the directors of sovkhozes and other state agricultural enterprises and also forest husbandry enterprises to issue up to 50 percent of the hay (free of charge) to workers engaged in the manual moving and procurement of hay on lands deemed unsuitable for the use of tractors and machines. No payment is issued for work performed in connection with the procurement of hay that is issued free of charge.

The recommendation was made to have the kolkhozes employ those material incentive measures established for sovkhozes and other state agricultural enterprises.

The councils of ministers of the union republics are supplying the kolkhozes, sovkhozes and other state agricultural enterprises with passenger cars and motorcycles from the commercial fund, for subsequent sale to their tractor and machine operators, motor vehicle operators, workers and specialists who achieve high indicators in the procurement of high quality feed during 1980.

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LIVESTOCK FEED PROCUREMENT

IMPROVED QUALITY OF HAYLAGE DISCUSSED

Moscow SEL'SKAYA ZHIZN' in Russian 24 Jul 80 p 2

[Article by V. Bondarev, candidate of agricultural sciences, All-Union Feed Institute: "The Quality of Haylage. How to Raise It"]

[Text] Practically all enterprises now store haylage. But not everyone by far is able to prepare high-quality feed. According to the data of the agrochemical service, the nutritive value of most haylage comprises only 0.22-0.24 feed units per kilogram and it contains very little protein and carotene. Moreover, the technology for putting in haylage has been well developed. Its correct utilization would enable workers to produce a feed from grasses that are harvested on schedule that will have a nutritive value of 0.40-0.45 feed units and a content of 125-140 grams of protein per feed unit.

In order to obtain a high-quality haylage it is first necessary to cut grasses on schedule--perennials during the phase of booting but no later than the start of ear-formation, and legumes at the beginning and during complete budding. A lag in the harvesting of grasses will seriously decrease the quality of the feed. Whereas the nutritive value of a kilogram of dry haylage made from orchard grass during the booting stage is 0.95 feed units, during the blooming phase it is only 0.62 units. The phases of vegetation last 7-12 days. Workers must be oriented toward this.

The second widespread error is the poor sun-drying of grasses. Haylage is preserved, as we know, by the physiological dryness of the mass. The critical level of moisture at which grasses may be kept is 55 percent. In practice grasses with higher moisture contents are haylaged. This brings about noticeable harm. If a protein-rich mass is stored at even 60 percent moisture, butyric acid forms in the feed and the products of protein decomposition accumulate. Nevertheless, grasses should not be overdried to a moisture below 45 percent because this will increase field losses. The optimal level for sun-drying plants is 50-55 percent.

Young grass contains a great deal of water and protein and it takes longer to sun-dry than grass that has stopped growing. In order to sun-dry the mass uniformly and quickly, the grass is flattened when cut and the wind-

rows are actively turned. Grasses are cut using windrow reapers-flatteners and the windrows that are formed are 1.20-1.25 meters wide. In regions with a moderate climate the weight of the freshly-cut mass should not exceed 5 kilograms per linear meter of windrow.

The third factor that decreases the quality of the haylage is the storage of large pieces of grass or of grass that has not been chopped at all. The sun-dried plants must be chopped finely in order to quickly flatten the mass. Some workers are of the opinion that grasses must be finely chopped only when the haylage is stored in the tower silo. This is wrong. On the contrary, plants should be chopped especially finely before being placed in trenches for storage. A mass made up of plants cut in large pieces is springy and begins to become well-flattened only after its temperature reaches 39-40 degrees. Consequently, the necessary degree of flattening is achieved as a result of the burning out of sugars and some protein. In order for the haylage to be of high quality plants must be cut into pieces 5-10 millimeters long and no longer than 15 millimeters.

Combines KSK-100 and Ye-280 cut grasses to the desired length when the last 12 blades are installed on the cutting drum.

The productivity of the KUF-1.8 combine is insufficient. For this reason, when this machine is used grasses are cut with a KRN-2.1 rotary mower with the subsequent formation of windrows from one cutting using GVK-6.0 rakes, the springs of which have been adjusted to sit 1-1.5 centimeters off the ground. With this type of work organization the productivity of the KUF-1.8 increases to 30-36 tons of sun-dried mass per shift.

It is very important to quickly force the air out of the mass during storage and to prevent its reaching the feed during the duration of the storage period. Towers meet this requirement best. In one test haylage was placed into a tower and into a surface concrete trench at the same time. In the tower 95 percent of nutrients were preserved; in the trench--90. In the tower protein and sugar were preserved better and the haylage contained less cellulose in the tower than in the trench. The nutritive value of a kilogram of dry haylage from the tower comprised 0.92 feed units; in the trench--0.83. The total output of feed units in the tower was 19 percent higher than in the trenches.

However, currently the primary type of storage facility for haylage remains the trench because in rayons with continuous low temperatures towers cannot be built since the feed in them freezes. When trenches are loaded the thickness of the flattened grass layer should be no less than 1 meter daily. If the mass is stored in a smaller layer the feed will be subject to self-warming, thereby increasing losses and decreasing quality. Trenches with walls that are 3 meters high are loaded for no longer than 3 days; those that are 5 meters high--no more than 5 days. The temperature of the mass will indicate the correctness of loading the trenches. The temperature should not exceed 37 degrees.

having filled the trench, the surface of the sun-dried mass is covered with freshly-cut chopped grass in a 20-25 centimeter layer. It is carefully tamped. A freshly-cut mass will lie flatter and acts as a better barrier to the air. Haylage in trenches must be covered with polymer panels having a thickness of no less than 0.15 millimeters. They should be pressed down by some type of weight.

The mass in the trenches must be carefully isolated from the surface from air access. Only in this case will high-quality feed be produced and will losses of nutrients be brought down to a minimum.

Sometimes hay that has been made wet by the rain and that has not been thoroughly dried is stored in trenches as haylage. A great deal of such mass is stored and used as haylage, but actually it bears no resemblance to haylage whatsoever.

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CSO: 1824

REGIONAL DEVELOPMENT

LAND DEVELOPMENT PROCEDURES ANALYZED

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 7, Jul 80 pp 36-42

[Article by Ye. V. Trifonova, candidate of economic sciences, State Scientific Research Institute of Land Resources (GIZR): "Methods of Determining and Corroborating the Development of Unexploited Lands"]

[Text] The arable land area comprises about 10 percent of the territory of the country or .87 hectares per capita. At the same time, the large land areas, including the arable land, are being systematically set aside for various kinds of construction and mining operations. These reasons plus the increase in population are engendering an absolute reduction in the area of arable land per inhabitant. Satisfaction of the population's growing requirements for production of agricultural output is generating a need for further expansion of the productive areas through development of the unexploited lands suitable for agricultural development. Because of this, in the 1977-1979 period the authors' collective of the GIZR--S. I. Nosov, P. F. Loyko, G. M. Volosenkov, V. P. Sotnikov and Ye. V. Trifonova--carried out research for the development of methods of determining and substantiating the land potential for expansion of the productive agricultural lands.

First they devised appropriate methods along with an economic justification of the effectiveness of the agricultural development of the reserve lands. These methods were designed for the scientific and practical workers who compile forecasts on the use of the country's land resources; this includes forecasts on the involvement of new areas in agricultural turnover.

Also worked out and formulated were criteria, principles and a system of indicators for determination and technical-economic corroboration of the suitability of the reserve lands for agricultural development. The calculation of the economic effectiveness of the use of these lands is carried out from two standpoints: the national economic and the cost accounting aspect--with assessment of the gross agricultural output on the basis of both the socially necessary costs and the actual prices for the sale of this output by the enterprises. The agricultural output prices based on socially necessary costs, will henceforth be designated as cadastral prices as worked out by the GIZR.

In the various soil and climatic zones we selected the organizations in which the amount of ordinary (rent-free) surplus product per unit of costs is equal to the average norm for this product in the physical production of the country. The amount of the average production cost for a unit of product in these organizations and the amount of ordinary (rent-free) surplus product constitute the extent of their use of cadastral prices.

The reserve lands are all the lands not in the "special-purpose production" category, lands which can, with appropriate development and utilization on the basis of progressive technology, be systematically assigned to some particular agricultural output. These are virgin lands, fallow lands, swamp land, sands, shoals, forest lands, sectors with shrubbery, semi-deserts, deserts and other similar territories.

In compiling the forecasts for determining the areas for possible development of these lands in accordance with the suggested methods, it is recommended that from the beginning we exclude from the totality of these lands those which in the foreseeable future, even with the latest achievements of science and technology, will not produce consistent yields of agricultural crops. They include all the reserve lands which lie north of the boundary of large-scale farming, as shown in the system of "Natural and Agricultural Districting of the USSR" compiled in the GIZR ("Natural and Agricultural Districting of the Land Area of the USSR." Moscow, 1975), the mountainous lands with tundra vegetation, as well as rocky "undeveloped" and other lands.

All the rest of the reserve lands are potentially suitable for agricultural exploitation and make up the subject of forecasting. The basic data which should be considered in deciding on the suitability of a particular land sector (tract) for agricultural development includes the soil cover, the topography, the agroclimatic and hydrological conditions, and the other natural conditions which affect the utilization of the land in agriculture.

Systematic comparison of these natural conditions will enable us to determine the suitability or unsuitability of a particular sector for agricultural development. In the northern regions there is a considerable area of undeveloped land. However, north of the isoline the temperatures are 1600 degrees (above +10 degrees) and even when there are unused lands, there is no sense in planning expansion of the agricultural tracts. Large-scale farming is impossible there: because of the lack of heat, it bears a hearth-like character in the best warmed places.

In revealing reserve lands, use is also made of the land production classification compiled by candidates of agricultural sciences Yu. V. Fedorin and V. P. Sotnikov (soil research division of the GIZR); this includes 349 basic record soil groups, which are distributed among 14 natural agricultural zones ("Natural and Agricultural Districting of the Land Area of the USSR." Moscow, 1975) on the basis of the principal types of arable land areas and the classes of operational quality of the lands.

According to the data of the experimental check of the methods worked out, the potential land reserves brought to light amounts to 83 million hectares and the area of first-priority land development up to the year 2000 comes to 50 million hectares, of which 16 million hectares are plowland (Table 1).

Areas of First-Priority Land Development (millions of hectares) for Expansion of the Agricultural Plowlands [as per the Assessment of the Experts for the Period up to the Year 2000]

Republic	Total Land	Arable Land	Perennial Planting	Haying	Pasture
RSFSR	25.3	10.5	0.2	6.4	8.2
Ukrainian	0.4	--	0.1	0.2	0.1
Moldavian	0.3	0.2	0.1	--	--
Belorussian	0.7	0.5	0.1	0.1	--
Lithuanian	0.3	0.2	--	0.1	--
Latvian	0.4	0.2	--	0.1	0.1
Estonian	0.5	0.3	--	0.1	0.1
Georgian	0.5	0.1	0.2	--	0.2
Azerbaijan	0.4	0.1	0.1	0.1	0.1
Armenian	0.3	0.1	0.1	--	0.1
Uzbek	1.4	0.3	0.02	0.3	0.78
Kirgiz	0.7	--	0.02	0.2	0.48
Tadzhik	0.6	0.2	0.1	0.1	0.2
Turkmen	3.2	0.5	0.1	0.4	2.2
Kazakh	14.8	3.1	0.03	1.6	10.07

After the development of the virgin and fallow lands, there were left only negligible amounts of land areas which could be tilled without any preparatory work. According to the information in table 1, the largest areas of reserve lands are in the southern taiga zone. It should also be borne in mind that the development of these new lands entails substantial costs for reclamation work, especially in the regions in the eastern part of the country.

A number of economists consider it desirable to take into account the degree of woodiness or the optimum woodiness. In forest and taiga regions characterized by an agroclimatic regime and soils which are satisfactory for the national economy, optimum woodiness should apparently be within the range of 40-50 percent of the overall territory. It is important to keep in mind the water-protection and other multifactor roles of the forests. This protection is particularly applicable to the mountainous forests of the Carpathian, Crimean, Caucasus and other southern and eastern mountainous regions where the occurrence of erosion and flooding is a particular hazard and where poorly developed soils are widespread.

The forests of the forest steppes, the steppes and the more southern and southeastern regions with their regime of Group 1 forest utilization are considered inviolable. In these regions it is essential to increase the areas for forests both in the form of protective plantings and by assigning for these purposes the agriculturally unproductive areas (sands, steep slopes with heavily eroded soils, gullies, etc.). This is the most important requirement for increasing the moisture retention of the fields, protecting the soils from erosion, and improving the overall hydrological regime of the territories.

The forecasting with respect to the use of the reserve lands is being developed in line with the current natural and agricultural districting and the current administrative division of the country, the Union republic, the kray, the ASSR, the oblast, and the country as a whole. The forecasts for the development of these lands are made in several variants to provide for the various time periods of the long-term plans, the anticipated progress in the level of technology, and the possible variations in the form and structure of the plantings.

Economic corroboration and determination of the effectiveness of agricultural development and utilization of reserve lands implies a comparison between the total production costs for these purposes and the final results of the production. The aggregate costs are made up of the capital investments for land development, organization of new agricultural enterprises, and expansion of those in operation on developed lands; also, the average yearly amount of working capital these enterprises need for normal operation.

The capital investments for development of the lands are projected in line with the current norms per hectare and, if these are lacking, the norms incorporated in the most recent approved land development plans for the respective regions and types of land being developed. Also taken into account is the use of these lands for plowland, perennial plantings, haying, pasture, etc.

The capital investments for the organization of new agricultural enterprises and expansion of the existing ones are projected on the basis of the norms incorporated in the most recent approved plans for the organization of sovkhozes on the newly developed lands in the respective regions with due

consideration for the specialization of the organizations and other local conditions.

The average yearly amount of working capital for these enterprises is projected on the basis of the established planned relationship between these assets and the average yearly amount of the fixed production capital in the sovkhoses of the relevant specialization, differentiated for the aforementioned regions.

As basic data we use the present-day relationship between the value of the fixed production capital in the sovkhoses of the relevant specialization, with allowance for possible changes in the future. The forecast of anticipated crop yield in a year of full development of the reserve lands and attainment of the planned indicators is compiled on the basis of the figures for progressive work of the past as well as the latest achievements of the experimental stations and the research institutes.

In the forecasts the structure of the cultivated areas is based on the scientifically corroborated recommendations contained in "Systems for Agricultural Operation," or the latest adopted plans for the organization of a sovkhos on the newly developed lands, or the opinion of the experts. The gross plant-growing output in physical terms is computed as the product of the predicted yield and the cultivation areas.

In value terms the plant-growing output is predicted in two variants--the national economic variant with evaluation of the output in common country-wide cadastral prices and the cost-accounting variant, that is, in the prices of actual sale by the sovkhoses in the final year of each preceding five-year period, differentiated in accordance with the respective price zones.

For the newly developed lands predicting the agricultural production cost is particularly complicated. It is recommended that there first be determined the actual crop yield, the cost of the cultivation of one hectare of each of these crops, and the cost per unit of every plant product in sovkhoses on similar, already developed lands; this, after segregating the figures for the wages of the basic production workers. Then, when we compare the predicted yield with the actual yield we determine its growth in percents.

It is also necessary to compute the cost of cultivating one hectare of every crop; 10 percent of the actual cost of growing it in a particular area must be increased by the percent difference between the predicted and the actual yield and 90 percent remains unchanged. These two figures give the predicted value of the predicted crop yield and we derive the predicted cost per unit of output in terms of the prices for the fixed production capital, the raw material, the fuel and the materials, all with the same level of workers' wages.

The forecast indicators for plant-growing gross income are also determined from both the national economic and the cost accounting standpoints. In the first instance the predicted output production cost, excluding the wages of the basic production workers, is derived from the predicted value of the gross output computed in cadastral prices and in the second instance in the prices for actual sale.

The forecast indicators for plant-growing net income are also estimated in these 2 variants. In the first the predicted gross output production cost for plant-growing is derived from the value of this output computed in cadastral prices; in the second instance it is computed in the prices for actual sale of the output by the sovkhoses of a particular zone in the last 3-5 years.

We recommend the following system synthetic indicators for the effectiveness of agricultural development and utilization of the reserve lands:

- a. Productivity of the arable lands, which productivity is characterized by the value of the predicted gross plant-growing output in cadastral prices and actual sales per hectare of land in the process of development;
- b. Profitableness of the arable lands as measured by the gross and net income per hectare of developed land;
- c. National economic profitability of the plant growing, as measured by the amount of gross and net income per ruble of aggregate production outlays and per ruble of cost of production of this output with the value of the gross output computed in terms of cadastral prices;
- d. Cost accounting profitability of the plant growing, which differs from the national economic profitability in that the computation per ruble of aggregate production outlays and the cost of production of gross and net income are based on the value of the output in terms of the prices for its sale by the sovkhoses of the relevant price zone region during the last three-five years.

The economic criterion for the different variants of the development and utilization of the reserve lands is the expected productivity of the plowlands being developed and the profitability of the plant-growing industry. Under these circumstances more effectiveness accrues to the land development variant where the indicators for plant-growing profitability are higher.

To determine the suitability of the methods devised for practical purposes, a check was made of various projects in a number of the country's regions. Estimates were compiled for various types of land development and utilization. The projects for the development of reserve lands were selected in various soil and climatic zones according to the principle of possible large scope of the various land groups and classes and the types of development (improvement) of them for plowing, haying or pasture. The subjects of research included: the hot marshes in the northwestern part of Kalininskaya Oblast; the swamps in the Suda and Mologa river areas in the southern part of Vologodskaya Oblast; the marshes in the bottomland of the Belaya River in Ryazanskaya Oblast; the Salymo-Yugansk marshes in western Siberia between the Bol'shoy Salym and the Bol'shoy and Malyy Yugan rivers; the Tubinskiy forest in the southern part of Krasnoyarskiy Kray; the sandy deserts in the

southern part of the Karshinskiy Steppe near the Shorsayskiy hollow in Kashkadar'inskaya Oblast in Uzbek SSR; and the land tracts overgrown with brushwood in the Chulym and Sumy river areas in the Barabinsk lowland of Novosibirskaya Oblast.

All the forecast indicators for development of the reserve lands are compiled in accordance with the aforementioned methods only for experimental checking purposes. When the forecast on the development of reserve lands is compiled for the long term, the parameters adopted can be refined. For each project we have worked out indicators of economic effectiveness in several variants with different forms of utilization (proportion of plowland) and different configurations of cultivation areas, levels of crop yield and cost of production of the anticipated output.

The results of the computations for each project are shown as per the most effective variant.

	Swamps in the Suda and Molaga River Areas	Hot Marshes	Marshes in the Belaya River Bottom- land	Salymo Yugamsk Marshes	Tubinskiy Forest	Sandy Deserts in the Shorsayskiy Hollow	Shrubby Land in Sumy and Chulym River Areas
Area (thousands of hectares)	78	38	60	74	271	233	203

Productivity of a hectare of
arable land

in cadastral prices	1066	1591	1893	432	887	3309	1008
in sale prices	713	933	928	246	381	2195	547
Income from a hectare of arable land based on gross income							
in cadastral prices	790	1157	1257	284	697	2723	784
in sale prices	428	499	291	97	191	1627	324
Based on net income							
in cadastral prices	732	1073	1155	256	665	2234	746
in sale prices	378	416	190	70	160	1119	285

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Indicators for national economic
and cost accounting profitability
per ruble of aggregate production
outlays

Gross income							
in cadastral prices	0.32	0.23	0.35	0.07	0.22	0.48	0.25
in sale prices	0.14	0.12	0.08	0.02	0.06	0.29	0.10
Net income							
in cadastral prices	0.30	0.21	0.32	0.06	0.21	0.39	0.24
in sale prices	0.12	0.11	0.05	0.02	0.05	0.20	0.09
Gross income per ruble of production cost							
in cadastral prices	2.23	2.33	1.70	1.61	3.14	2.53	2.99
in sale prices	0.96	1.23	0.40	0.55	0.86	1.51	1.23
Net income							
in cadastral prices	2.07	2.18	1.56	1.46	3.00	2.08	2.84
in sale prices	0.80	1.13	0.26	0.40	0.72	1.04	1.08

From the data in Table 2 one can see that the valuation of the lands under-
going development in the projects under study ranges from 3,300 to 432
rubles per hectare; this results from the difference in soil and climatic
conditions, the structure of the anticipated use of the land (for plowing,
haymaking, pasture), the kind of crops, and their productivity. Thus, for
example, the maximum productivity of the development of the sandy desert in
the Karshinskiy Steppe is due to the fact that the greater part of this
tract will be used for plowland with cultivation of a valuable crop--cotton.

The effectiveness indicators are compiled at the time of evaluation of the
anticipated output at the cadastral prices of current sale by the organiza-
tions of the respective price zones. With the use of these prices we deter-
mine the volume of agricultural gross output and the productivity of the
plowlands being developed.

The volume of net output and all of the surplus product (both per hectare
and per ruble of aggregate producer goods and also per ruble of net cost of
production) are computed at the time of their valuation in cadastral prices
and the volume of gross income and net profit is computed at the time of
valuation according to the actual sale prices.

The final synthetic indicators of the economic effectiveness of new lands
from a national economic standpoint are approximately double the indicators
in the cost accounting variant.

The level of productivity of the lands has a distinct effect on their profit-
ableness: the greater the productivity, the greater the profitableness.
The only exception is the Tubinskiy forest, where a ruble of production cost
yields far more net output and surplus product. This is the result of a
very low production cost (grain crops predominate), engendered by a high
level of mechanization of production.

Conclusions

The aforementioned indicators of the economic effectiveness of development
of reserve lands enable us to make an objective comparison of the various
types of land development (draining, irrigation, etc.), the use of these
lands (for plowing, haymaking, pasture) with any configuration of cultivated
areas, with a varied production level, etc.

These are also the requirements that must be met by the recommended methods
of determining the effectiveness of the development of new lands. They en-
able us to carry out an economic evaluation of the agricultural development
of the reserve lands from not only the cost accounting but also the national
economic standpoint. This has been made possible by the use of cadastral
prices for agricultural output, prices based on the socially necessary
closing costs for the production of this output. This approach enables us
to objectively compare and appraise the effectiveness of the development
of reserve lands under diverse and similar soil and climatic conditions
and in similar and diverse lands. It also enables us to reach economically
valid decisions with respect to the effectiveness of the use of these
lands.

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FULLER USE OF BAM ZONE LAND FOR FURTHER EXPANSION OF AGRICULTURE

Moscow SEL'SKAYA ZHIZN' in Russian 13 Jun 80 p 2

[Article by Yu. Novoselov, deputy chairman of the Siberian Branch of VASKhNIL (Novosibirskaya Oblast): "In the BAM Zone"]

[Text] The scope of work is becoming broader and broader at one of our largest construction projects: the Baykal-Amur Main Railroad Line. The entire country is participating in its construction. We have already laid 1,500 kilometers of rail and new cities, workers' villages and railroad stations and growing up rapidly here, outstripping the predictions of specialists. All this makes the problem of creating a food zone for the BAM more critical each year. The solution to this problem has become one of the main factors in this region's development.

Recently certain measures have been taken to reinforce the local food base. The RSFSR Ministry of Agriculture has created the Magistral'nyy Sovkhoz in Irkutskaya Oblast and the Angarskiy, in the Buryatskaya ASSR; it has constructed several small dairy farms and also cow barns on the Podymakhinskiy and Markovskiyy sovkhoses in Ust'-Kutskiy Rayon, and the Zarya in Tyndinskiy Rayon. The production of milk, potatoes and vegetables is also being increased in other rayons along the route.

But many ministries and departments that are participating in the assimilation of the wealth of the BAM zone are not taking an active part in the development of agriculture here. Certain executives think that industrial assimilation of this regions is a thing of the future and that there is no reason to hurry to organize sovkhoses and subsidiary farms. But even today about 600,000 people live in this zone (within the area from Ust'-Kut to Komsomol'sk-na-Amur). Such population points as Tynda, Neruyngri, Chul'man, Severobaykal'sk, Nizhneangarsk and Ust'-Kut have tens of thousands of residents. Therefore it is necessary to begin at once to develop agricultural production in the immediate vicinity of the mainline which is under construction and its population points.

We should like to remind those executives who wish to put off the development of the food base until later that if a decision to organize subsidiary farms is not made immediately, a minimum of 4-5 years will have to be spent on research and planning work as well as the development of a construction base, and one cannot expect products from them until the end of the Twelfth Five-Year Plan.

Unfortunately the "fear" that the construction of agricultural facilities will outstrip the construction of industrial enterprises has become so persistent that many executives simply do not think about the long period of time that is required for the creation of a food base. Incidentally, we do not know of a single case where a dairy complex or poultry farm has been constructed before an industrial enterprise has, so that there was nowhere to sell milk, eggs and meat. But there are many examples of exactly the opposite. In particular, agricultural development is decades behind industrial development in the Bratsko-Ust'-Ilimsk territorial production complex.

Let me also cite these figures. While the gross output of industrial enterprises increased 2.3-fold in Western Siberia, including 4.9-fold in Tyumenskaya Oblast, agricultural output increased by only 16 and 12 percent, respectively. For each percentage point of increase in industrial output, there were the following amounts of increase in agricultural output: for Western Siberia - 0.12 percent, Tyumenskaya Oblast -- 0.03 percent, and Eastern Siberia -- 0.1 percent.

The greatest arrears are in the assimilation of new land, without which the development of agriculture in the BAM zone is unthinkable. Even the small number of cows that have been brought in to supply milk for Tynda and Neryungri are not being provided with the necessary feeds, since there are no hay fields or pastures at all here and there are only 4 hectares of arable land.

As early as 5 years ago scientists in these regions found sections of land that are suitable for agricultural assimilation. Our proposals were submitted to agricultural agencies and scientists have been working persistently if only on the beginning of planning work. During that time the plan for the Neryungri dairy complex for 800 cows was prepared and approved by the USSR Ministry of the Coal Industry, and a cow barn was constructed on the Zarya Sovkhoz. But nothing has been done to assimilate the land near Tynda, although there is a convenient area here near the Seta River. Under the current five-year plan it is intended to assimilate only 30 hectares near Chul'man even though today there are 300 cows and it is planned to construct another farm for 800 cows.

Soil scientists, with the participation of land management engineers, have proved that it is possible in the near future to assimilate 100,000-110,000 hectares in the BAM zone. Incidentally, these are minimal figures that are suggested taking into account the possible capital investments and

other factors. Vostoksiibgiprovdkhoz and Dal'giprovdkhoz have earmarked a land reclamation fund for the BAM zone in the amount of 1.1 million hectares, which exceeds the amount of the initial assimilation 10-fold.

Unfortunately, the problem of the assimilation of new land in the BAM zone becomes bogged down in numerous debates and lengthy discussions. The RSFSR Ministry of Agriculture, for example, plans to assimilate hundreds of millions of rubles under the next five-year plan, including for the construction of dairy farms, as a result of which the number of head of cows will increase 10-fold, but the question of the development of a feed base is not being fundamentally resolved. Far from all industrial ministries which are or will be "masters" of one industrial unit or another in the BAM zone are actively enlisting in the creation of food production facilities.

In the interests of this matter, a section entitled "The Creation of a Food Base" should become a mandatory part of all pre-planning and planning documents for new industrial enterprises, especially under the severe conditions of the Near and Far North. As we know, even before the beginning of the construction of plants, one determines the sources for their supply of water, electric power and raw materials, but it is no less necessary, and perhaps more so, to determine the sources for supplying the working population here with food. These plans should not remain on paper either.

We have certainly not touched upon all of the problems involved in creating a food base in the BAM zone. The development of individual fruit and vegetable growing is no less important, and it also requires organized assistance. All these problems must be solved today and not put off until tomorrow.

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REGIONAL DEVELOPMENT

DEVELOPMENT OF AGRICULTURE IN BAM ZONE DISCUSSED

Moscow SEL'SKAYA NOV' in Russian 6 Jun 80 pp 11-12

[Article by Yu. Novoselov, deputy chairman of the Siberian Branch of VASKhNIL for the BAM zone: "Reliable Rear Support for the Mainline"]

[Text] There are good prospects for the development of agricultural production in the zone of the Baykal-Amur Mainline. But industrial centers of this region cannot be supplied with all necessary products through local resources alone. Therefore a course has been taken toward an optimal combination of the production of perishables and less transportable products locally, while the remainder are to be shipped from adjacent regions which have more favorable conditions and transportation links with the BAM zone.

Since the soil and climate conditions along the BAM route differ, the proportion of local production and products which are shipped in will also be different for the various sections. In southern Yakutiya and the northern part of Chitinskaya Oblast, it will be necessary to ship in almost all the agricultural products, but in such rayons as Zeyskiy in Amurskaya Oblast, Kazachinsko-Lenskiy in Irkutskaya Oblast, and Komsomol'skiy in Khabarovskiy Kray, the main source of potatoes, vegetables and whole milk should be local production.

In this connection there arises the problem of interrayon and interoblast economic ties. Certain products (for example, grain) can be supplied to the BAM zone from common state resources without the assignment of specific supplier rayons. For such kinds of products as potatoes and vegetables of local assortment which are raised on open ground, coarse feeds and others, it is expedient to have clearly determined rayons or farms which are bound by law to supply these products to specific population points and industrial centers of the BAM zone. In other words, we are speaking about the organization of rear support bases for the supply of food to the BAM zone.

From the economic standpoint it is expedient to create rear support bases in those cases where the cost of the products obtained from them plus expenditures on their transportation turns out to be less than (or equal to) the production costs of similar products produced directly in the BAM zone. Such an equation can be used not only for current expenditures, but also for capital investments.

Which products will the rear support bases deliver to the BAM zone? Mainly potatoes, vegetables (cabbage, beets, carrots and others) and some meat and dairy products -- butter, cheese and, if necessary, feed and young animals to replenish the herds. Reverse ties are also possible: young animals to replenish the herd of large horned cattle, for which there are not adequate feed lands in the BAM zone. It would also be expedient to ship animals for the completion of raising, grazing and fattening to rayons which have the necessary natural hay fields and pastures -- the rear support bases.

The large rear support bases of the BAM zone could be: for Irkutskaya Oblast -- Kirenskiy Rayon, for the Buryatskaya ASSR -- Barguzinskiy and Kurumkanskiy rayons, for Khabarovskiy Krai -- Yevreyskaya Autonomous Oblast, and for Amurskaya Oblast -- Shimanovskiy, Mazanovskiy and several other rayons.

Behind these words -- "could be" -- there are many complex problems and a large amount of work. Let us take, for example, the Barguzin basin, which has transportation links with the BAM zone through Lake Baykal and the Tazy-Yuyan highway over a distance of about 200 kilometers which, true, requires improvement so that it can be passable at any time of year.

Scientists of the Siberian Branch of VASKhNIL have conducted an investigation which coincided with the harvesting period in Barguzinskiy and Kurumkanskiy rayons in the Buryatskaya ASSR. This enabled them to be clearly convinced of the great possibilities of increasing the production of agricultural products in the Barguzin basin.

This basin is one of the warmest places in the republic. The conditions are generally favorable for plant growing. So far there are only 4 kolkhozes and 7 sovkhozes here. The leading branch is animal husbandry. The farms keep large horned cattle and sheep.

The Barguzin basin suffers from droughts. Not enough rain falls here at the beginning of the summer. The matter is complicated by the dust storms and wind erosion. During the second half of the summer, because of the abundant rains, the Barguzin River and its tributaries overflow and flood the lowland, which impedes agricultural work, especially feed procurement. Therefore intensification of agricultural production requires comprehensive land reclamation work in the basin.

The kolkhozes and sovkhozes of these rayons have accumulated no small amount of experience in irrigation. On the Barguzinskiy Sovkhoz 30

quintals of hay of annual grasses and more than 350 quintals of root crops are obtained from each irrigated hectare. On the Sakhalinskiy Sovkhoz the productivity of root crops exceeds 400 quintals. The leading production workers achieve even larger crops: the team leader D. V. Chirkova from the Kolkhoz imeni K. Marks obtained 521 quintals per hectare from an area of 15 hectares. And these farms are located in the Transbaykal regions where climatic conditions are severe.

Unfortunately, there is not enough irrigated land in the Barguzin lowland and the majority of irrigation systems need to be revamped. But the prospects are not bad: the irrigated area can be increased 4-5-fold. And the marshy areas can be drained. There is positive experience in reclaiming overmoist lowlands in the region.

The peculiarities of the climate and the soils in the basin make it necessary to take a cautious attitude toward the land and to consider all factors. In Kurumkanskiy Rayon we had occasion to speak with the old residents who said in the so-called kuytyny -- level sections of land on an area of tens of thousands of hectares -- there were previously excellent hay fields and the grass grew almost to the height of a man. Now the kuytyny have been plowed and almost all of the arable land of the sovkhozes and kolkhozes of the basin is concentrated here. There began to be wind erosion and the yields dropped. Research conducted by scientists of the Buryat Agricultural Institute showed the effectiveness of applying the soil protection system of farming under these conditions.

Agricultural forest melioration is becoming very important in combatting wind erosion and increasing the productivity of agricultural crops. It will be extensively developed in the next few years, especially in the lower and upper kuytyny.

As investigation has shown, the production of agricultural products in the Barguzin basin can be increased to amounts that satisfy the needs not only of the northern regions of the Buryatskaya ASSR, but also the future Udokanskiy industrial center in Chitinskaya Oblast. But to do this it will be necessary to implement a complex of measures for land reclamation, chemization and supply of the farms with modern technical equipment as well as for the construction of large animal husbandry farms and the building of highways. It will be necessary to enlist personnel from regions where there is a surplus of manpower. The assimilation of the Barguzin can become a "testing ground" for the comprehensive formation of a large rear support base for the BAM zone. But the resources of the Buryatskaya ASSR alone are inadequate to solve this problem.

In the future the farms of the Barguzin basin will deliver potatoes, vegetables, meat, milk and dairy products to the BAM zone. The Barguzinskiy and Chitkanskiy sovkhozes are now specializing in the production of potatoes and vegetables. It is a correct choice: these farms are located closer than others to the Ust'-Barguzin port and it is most convenient to

transport potatoes and vegetables on steamships across Lake Baykal. As the highway to Ulan goes into operation, these branches will also develop in Kurumkanskiy Rayon.

It is possible to raise dairy and meat cattle successfully here, especially after the Barguzin River is regulated and the large areas of natural hay fields are drained. Good experience has been accumulated in keeping meat cattle of the Kazakh Whitehead breed in Kurumkanskiy Rayon. But it is a complicated matter to fill in the herd under these conditions. The present rates of reproduction do not make it possible to achieve increase in the number of head of cattle, especially of dairy breeds. Therefore it is necessary to ship in young animals to replenish the herd from other regions of the country, for example, from Orenburgskaya Oblast and Kazakhstan. It is also necessary to create in the Barguzin basin a breeding novkhov for the Kazakh Whitehead breed and, of course, it will be necessary to undertake a large amount of construction of new dairy farms and complexes as well as fattening areas.

Because of the greater number of head of cattle and the increased productivity of the animals, the need for feeds will increase many times over. Therefore a large part of the arable land should be allotted for grain forage and feed crops, including about 40,000-42,000 hectares of irrigated areas. The area of hay fields will be expanded to 65,000-67,000 hectares and about 40,000 of these hectares will be irrigated. It is intended to create long-lasting crop pastures -- no less than 0.5 hectares per 1 cow.

In order to produce seeds of perennial grasses, it is expedient to organize a specialized farm in the basin. Research of the Barguzin strain testing station shows that it is possible to obtain sufficiently high yields of feed crops. For example, Ukosnyy 550 oats produces more than 200 quintals of green mass or more than 60 quintals of hay per hectare. Sunflowers and peas are also productive here. But the scientists are still faced with many problems related to selecting strains and developing the agro-technology for the cultivation of silage crops.

The fields and farms of the Barguzin basin will become more generous from year to year. This means that it is necessary to prepare for receiving and processing a large quantity of agricultural products. It is intended to revamp the Ust'-Barguzin meat combine. A butter and cheese plant will be constructed in the village of Bayanyul. The Ust'-Barguzin fish combine is being revamped. It would be expedient to construct a fruit and vegetable plant and enterprises of the mixed feed industry on the territory of the basin.

Additional investments are also necessary for reinforcing the repair base, constructing storage facilities for mineral fertilizers and facilities for organizations and enterprises of the construction industry.

But all this is only the first preliminary outline. The natural conditions of the Barguzin basin have not yet been adequately studied. VASKhNIL is organizing support points on several sovkhoses of Barguzinskiy and Kurumkanskiy rayons. Institutes of economics, animal husbandry, the Siberian Scientific Research Institute of Agriculture and other scientific institutions are being enlisted in the research. Even in the first stage, close business contacts have been established with planning organizations -- Vostoksibgiprovodkhoz and its Buryatskaya branch -- as well as with institutes of the Siberian Branch of the USSR Academy of Sciences. Taking into account the complexity of the assimilation of the basin and the immense volume of capital investments, scientific research is vitally necessary in order to avoid wrong decisions.

The same problems arise with other rear support bases -- in Irkutskaya and Amurskaya oblasts and in Khabarovskiy Kray. In Kirenskiy Rayon in Irkutskaya Oblast, after removing the roots of trees, it will be possible to put about 50,000 more hectares of irrigated land into agricultural circulation with relatively small expenditures on their assimilation. Taking into account the fact that in the northern part of the oblast in the next few years we shall begin to form a new territorial production complex, it becomes an insistent necessity to intensify agriculture as rapidly as possible in Kirenskiy, Ust'-Kutskiy and Kazachinsko-Lenskiy rayons.

There are great possibilities of increasing the production of agricultural products in the central and southern rayons of Amurskaya Oblast. Here it is difficult to single out any individual rayons which will supply products to the BAM: the entire oblast will serve as a kind of rear support base for the BAM.

In Khabarovskiy Kray this task can be carried out by Yevreyskaya Autonomous Oblast. There are 34 sovkhoses and 2 kolkhoses here, to which 258 hectares of agricultural land have been assigned. Research has shown that here it is possible to bring another 460,000-465,000 hectares of arable land into circulation, including 150,000 hectares for plowed land, and to organize more than 10 new sovkhoses and interfarm dairy, fattening and reproduction enterprises. Their products will be delivered to the industrial centers of the BAM zone, including to such a large city as Komsomol'sk-na-Amur. Even today there are more than 200,000 people living in Komsomol'sk-na-Amur and the nearby sovkhoses have only 5,000 hectares of arable land.

Rear support bases are food shops for the large industry of the BAM zone. They must operate dynamically and reliably, in the same rhythm with the plants, mines and construction projects.

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REGIONAL DEVELOPMENT

DEVELOPMENT OF FOOD BASE FOR ZONE OF BAYKAL-AMUR TRUNK LINE

Onsk ZEMLYA SIBIRSKAYA, DAL'NEVOSTOCHNAYA in Russian No 6, Jun 80 pp 61-63

[Article by V.A. Boyev, director of SibNEEESKh and Corresponding Member of VASKhNIL: "Agrarian-Food Complex of BAM"]

[Text] High rates of development for the national economy in the new regions of industrial construction in Siberia and the Far East, including the zone of BAM (Baykal-Amur Trunk Line), are possible even in the face of balanced development for the production and social infrastructures. Accumulated experience reveals rather clearly that the attraction of labor resources to these regions represents the main productive force for developing the natural resources, while the retention of personnel already available here, assisted only by higher wages, does not always produce the desired results. The economic development of new regions, particularly if such development is to be carried out over a relatively prolonged period of time, should be combined with the creation of a complex of the good things in life and ensuring the availability of rich nutritious food -- the basic foundation for efficient human activity.

As yet, the farming and animal husbandry products being obtained directly in the BAM zone do not meet even the minimal requirements in terms of volume and assortment. Thus the main bulk of such products must be imported from other regions of the country.

The complicated production conditions make it necessary to use differentiated technical-economic criteria and estimates when evaluating and preparing plans for the creation of an APK (agrarno-pishchevoy kompleks; agrarian-food complex) in new regions of industrial development. The use here of average union indicators inhibits or even precludes the possibility of making correct decisions. This has to do first of all with determining the norms for capital investments, expenditures for live and past labor in order to obtain a unit of output, transport rates, coefficients of efficiency, expenses for the creation of cultural-domestic conditions for work and leisure activities and branch and gross profitability.

Accumulated experience has shown that slow increases and low economic indicators for the production of milk, eggs and individual types of meat and vegetables, in the vicinity of the areas where they are consumed and in a number of regions of new industrial development, are the result not only of unfavorable soil-climatic factors but also of shortcomings in production planning, and organization and in ensuring that these regions are supplied with the material-technical resources required for organizing the production of agricultural products at the various sites.

Comparable data on the effectiveness of producing the principal products of farming and animal husbandry in individual sectors of the BAM zone or importing them on the side reveals that at a majority of points along the trunk line it is more profitable to import almost all food products with the exception of venison, rather than producing them on the spot. However, when resolving the problems concerned with the feasibility of production on the spot, as opposed to importing the products on the side, a decision should not be based solely upon a formal comparison of the actual expenditures for these purposes. It should be borne in mind that the relatively high actual expenses required for producing milk, vegetables and a number of other products in the vicinity of the areas in which they are consumed are caused not only by unfavorable natural factors but also by organizational-economic factors and, in particular, by the dispersion of production among small sectors and by the use of the wrong technology.

Consideration must also be given to the fact that, owing to low temperatures throughout an extended period of the year, it is impossible to supply the BAM zone with such important food products as whole milk, potatoes and fresh vegetables, unless use is made of special and highly expensive transport equipment and packaging. This cannot be avoided even with the construction of storage facilities having a controlled storage regime or by importing the products during the warmer periods of the year, particularly if we have in mind rather high consumption volumes for these products. Thus, by 1990, the annual consumption of potatoes in the BAM zone will be approximately 300,000 tons, vegetables -- 300,000 tons, milk and meat -- 420,000 tons and eggs -- 400 million.

The experience accumulated in solving a similar task in northern Tyumenskaya and Tomskaya oblasts, the Yakut ASSR and in a number of other regions of Siberia and the Far East justifies the conclusion that the population in the BAM zone can be supplied with food products first of all by organizing the production of difficult to transport and highly perishable products directly in the vicinity of the consumption areas (greenhouse and partially open ground vegetables, potatoes, milk and eggs). Secondly -- by raising the intensity of agriculture in adjoining regions having more favorable natural-economic conditions for agricultural production. Heat-loving vegetables, fruit, grapes and melon crops can be imported from other regions of the country. Finally, proper use should be made of wild-growing food products (mushrooms, berries, nuts and others), fishing and hunting.

The importance of the mentioned sources for obtaining products for the various sectors of the BAM zone differs depending upon the contrasts in the soil-climatic conditions, the locations, the degree to which transport lines of communication are made available and other factors. Whereas in the Amur sector of the trunk line the requirements for potatoes, open ground vegetables, milk and even meat may, during the next few years, ensure the organization of their production in the vicinity of the consumption areas, in the zone of the intensively created Chul'man-Aldan TPK [territorial'nyy promyshlennyy kompleks; territorial industrial complex], where in recent years the population has increased in size repeatedly, the principal bulk of the food products, in the foreseeable future, will have to be imported from other regions. Including -- from Amurskaya Oblast, which has favorable soil-climatic conditions at its disposal for increasing considerably the production of a majority of the farming and animal husbandry products.

In each sector of the BAM zone, instead of placing them in opposition to one another the different variants for obtaining the required food products should be combined, taking into account the minimal total expenditures for labor and resources. This is the basic foundation for the strategy and tactics concerned with carrying out the task of providing food products for the population engaged in building the trunk line and the new regions of intensive industrial development.

The creation of the food base in the BAM zone began practically with the zero-order scientific reserve for the more important questions associated with this complicated problem. Doubt was cast not only upon the economic feasibility but also upon the possibility of obtaining agricultural products here in considerable amounts. But the situation is changing rapidly owing to the measures adopted. During the past 3 years, scientists of the Siberian Branch of VASKhNIL [All-Union Academy of Agricultural Sciences imeni V.I. Lenin], in coordination with 32 other scientific-research and experimental institutes, carried out a considerable amount of work. During the course of carrying out this work, determinations were made as to the product volumes, the principal trends for developing the APK in the more important sectors of the trunk line, the priority projects for agricultural development and the organizational forms for solving this task and approximate norms were validated for the material and labor expenditures required for obtaining the principal food products, for the capital investment volumes needed for creating the food base and for the schedules for their recovery.

The potential land resources in the zones of BAM considered suitable for agricultural development amount to approximately 240,000 hectares, including 90,000 to 100,000 hectares of arable land. The most suitable lands for immediate inclusion in agricultural turnover are the lands in Kazachinsko-Lenskiy and Ust'-Kutskiy rayons of Irkutskaya Oblast, in the Verkhneangarsk and Muyskaya basins in the Buryat ASSR, in Amurskaya Oblast and in Khabarovskiy Kray. On this basis, a substantial increase must take place in the production of agricultural products at 18 existing farms and 14 new

sovkhozes and subsidiary farms created. According to estimates by the Siberian Scientific Research Institute of Agricultural Economics, the number of dairy cows in the zone of the trunk line must be increased by 20,000-23,000 head and seven poultry factories capable of producing 350 million eggs annually and the same number of hothouse combines having an area of 85-90 hectares must be built.

Expeditionary inspections and fixed experiments conducted during the 1974-1978 period have shown that in many sectors of the trunk line, assuming the use of definite agricultural practices, it is possible to obtain 110-180 quintals of potatoes per hectare, 130-420 quintals per hectare of individual types of vegetables from open ground and 140-260 quintals per hectare of annual and perennial grass fodder. In 1978, despite a deficit of moisture during the early summer period, 221 quintals of oats (Narymskiy-943 variety) fodder and 306 quintals of sunflowers (Gigant variety) were obtained per hectare at the Tyndinskiy Support Base. In Kazachinsko-Lenskiy Rayon of Irkutskaya Oblast, a yield of 536 quintals of cabbage (Slava-1305 variety) was obtained and a tomato yield, involving the use of film coverings, of 382 quintals per hectare.

It is important to note that notwithstanding the stern growing conditions, the vegetables, potatoes and forage crops and also forest food products (mushrooms, berries and nuts) obtained here possess a rather high biological value owing to intense solar radiation. The availability of cheap sources of electric power and heat make it possible, within a brief interval of time, to develop the hothouse economy to a level which will ensure the production of 15-18 kilograms of hothouse vegetables annually for each individual residing here.

In view of the shortage of labor resources and the limited amount of land deemed suitable for agricultural use, combined with great territorial separation and differences in the sizes of the cities and worker settlements created, the organization of agricultural enterprises which differ in terms of specialization and departmental subordination is considered advisable. During the initial stages in the formation of the APK, special attention must be given to the organization of subsidiary farms. As a rule, the financing and logistical support for such farms must be carried out by industrial and transport departments. In view of the fact that many agricultural enterprises are not able to achieve rhythmic production of commodity output until the second or third year following the commencement of construction, their construction and technical equipping should be classified as being in the category of more important and priority undertakings.

The organization of food departments at industrial enterprises, in addition to ensuring the availability of difficult to transport food products, is making it possible to utilize the engineering facilities of industrial and transport organizations for agricultural purposes in a more rational manner. This will reduce substantially the total expenditures required for creating

the infrastructure needed and it will alleviate the shortage in labor resources by attracting into agricultural production the members of families of workers engaged in industry.

Specialized enterprises (dairy complexes, hothouse combines, poultry factories and others) should first of all be created in the vicinity of such rapidly growing cities as Severobaykal'sk, Neryungri, Chul'man and Tynda. In sectors of the zone which are located at considerable distances from industrial and transport terminals and where relatively small worker settlements prevail, the production of a portion of the vegetables, potatoes, whole milk and dietetic eggs should be ensured through the organization of multi-branch farms. Depending upon the natural-economic production conditions and the requirements for individual food products, the size of their intra-farm subunits (brigades, departments, branches) must naturally vary.

The most important prerequisites for efficient work by such farms include: extensive utilization of the lines of communication, heat, power and other resources of industrial enterprises, a high level of mechanization and automation of production processes and efficient organization of the marketing of products throughout the year. This requires that they have equipped bases at their disposal for the preparation of lactate products, refrigerators, storehouse facilities and appropriate transport and other types of resources.

As revealed by the experience accumulated in Bratsk and Komsomol'sk, many vegetables, potatoes, berries and animal husbandry products can be obtained by means of collective horticulture and gardening, through the development of private subsidiary farms and through the proper use of the food resources of forests.

However, despite the obvious importance and advisability of constructing projects of an agricultural nature, the use of a narrow departmental approach in this work has still not been eliminated. This applies first of all to the ministries of the coal industry and non-ferrous metallurgy, which are doing very little in the interest of creating a food base. The same can be said with regard to the ministries of construction materials, the timber and wood-processing industry, motor vehicle transport and the river fleet of the RSFSR.

On the basis of inspections carried out, it has been established that many tracts of arable-capable land are not being used mainly owing to a shortage or complete absence of labor resources. In view of this fact and in addition to making extensive use in agriculture of the members of families of industrial and transport workers, a complex of measures is required for attracting workers from other regions of the country.

Practical experience has shown that even partial satisfaction of the requirements for labor resources here is possible only if the wage level

and the social and cultural-domestic working and living conditions of those engaged in the production of food products are roughly the same as those enjoyed by workers in other branches of the national economy.

Taking into account the sharp deficit in labor resources, particularly with regard to the production of agricultural products, more complete use should be made of the favorable soil-climatic conditions available in those regions having transport outlets to the trunk line under construction. This applies primarily to Ust'-Kutskiy and Kirenskiy rayons in Irkutskaya Oblast, to Kurumkanskiy Aymak in the Buryat ASSR and to Zeyskiy and Svobodnenskiy rayons in Amurskaya Oblast. The Barguzin Basin in the Buryat ASSR holds great promise for the future. At the present time, there are 209,000 hectares of agricultural land here, including 77,000 hectares of arable land suitable for reclamation. In the near future it will be possible to grow silage crops, food root crops, vegetables and potatoes on irrigated and drained lands and, on this basis, fully satisfy the requirements of the population in the Zabaykal sector of IAM for many products.

Simultaneous with the development of agricultural production in the IAM zone and in adjoining regions, a requirement will exist for organizing rear area food bases. The regions of the Barabinskaya Steppe and the Kulundinskaya Steppe in Novosibirskaya Oblast, Altayskiy Kray and Omskaya Oblast, which are located near the Trans-Siberian Trunk Line, are considered to be favorable for this purpose. With relatively low investments (compared to similar facilities in the IAM zone) for land reclamation and for the development of a logistical base, it is possible here, within a brief interval of time, to increase considerably the production of dairy products and various types of meat and feed (forage grain, hay, grass meal and so forth) for delivery to the IAM zone. A portion of the farms in these regions should specialize in the raising of young reproductive stock for the new regions of development, young stock which meets the requirements for an industrial technology.

Unfortunately, the producer goods presently being supplied to the IAM zone and to other regions of Siberia and the Far East having similar natural-economic conditions, in terms of both volume and technical-economic indicators, do not meet the stern conditions required for their use. This is bringing about considerable expenditures for their reconstruction and operation and also shortfalls and losses in output production.

This shortcoming can be overcome by expanding the production of those items of equipment and materials which meet the operational requirements for the Far North. In the interest of carryin out this task, scientific-engineering and planning-design work should be expanded considerably, 2-3 machine-testing stations should be organized in the IAM zone and a number of large-scale industrial enterprises should be created for specializing in the production of the producer goods required for agriculture in the North and especially for the complex mechanization of animal husbandry and vegetable growing.

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COMMENTS ON SERIES COVERING DEVELOPMENT OF SIBERIAN AGRICULTURE

JOURNAL 'SIL'SHAYA ROV' in Russian No 6, Jun 80 pp 12-13

[Follow-up commentaries on three-part series on development of Siberian agriculture: "Siberia: The Potential of Science"]

[Text] Under the heading ["Siberia: The Potential of Science"], a series of articles was published in issues Nos 10-12, 1979. Responses to the journal's contribution follow:

by the Deputy Chief of the Department of Agriculture of Gosplan SSSR
A.Ya. Velistratov:

The Department of Agriculture of Gosplan SSSR communicates that in the articles attention is directed correctly to defects in the coordination of scientific-research work and the difficulties of putting scientific achievements into practice...

Gosplan SSSR on representation of the councils of ministers of union republics and the USSR Ministry of Agriculture provides in five-year and annual plans for introducing into production completed scientific developments of statewide importance. Many problems proceed on the basis of plans of ministries and departments. It would appear necessary to strengthen general control over progress of their fulfillment.

While basically favorably rating the published articles on problems of development of Siberian agricultural science, the Department of Agriculture notes that they do not examine sufficiently critically the work of scientists of the Siberian branch of VASKhNIL [All-Union Academy of Agricultural Sciences (named V.I. Lenin)]. In the past five years there has not been regionalized in Western Siberia a single variety of rye, buckwheat, peas or vetch selected by the region's scientific institutions and little regionalization has been done with the varieties of other grain crops. In 1979, only about 3 percent of the grain crops consisted of locally bred varieties.

The problem of increasing production of the soybean--a high-protein fodder crop--is slow in being resolved. At the present time, about 90 percent of the areas under the soybean are located in the Far East. However, the All-Russian Soya Scientific-Research Institute belonging to the Siberian branch of VASKHIL is still not the leading technological center for this crop. There has not been worked out a complex of measures ensuring the production of high, stable soybean yields in this region. Most of the varieties developed by the institute's scientists do not meet present-day requirements. In this connection the old varieties are slow in being replaced. Even in Amurskaya Oblast, where the All-Russian Soya Scientific-Research Institute is located, about half of the sowings of this crop in 1979 were taken up with varieties regionalized 10 or more years ago.

In the opinion of the Department of Agriculture of Gosplan SSSR, it is now necessary to develop a complex of measures aimed at increasing the responsibility of scientists both as to the results of their labor and for more active introduction into production of progressive varieties and scientific developments.

By the Deputy chief of the Department of Agriculture and Procurement of Gosplan RSFSR Ye.I. Sholokhov:

We consider that the questions raised in the series of articles are pertinent not only for Siberia but for the RSFSR as a whole.

Considerable work has been done recently on improving the planning and organization of introduction of scientific achievements into agricultural production. Special units have been created for the planning and coordination of such introduction in ministries of agriculture of the RSFSR and the autonomous republics, in agricultural production administrations of oblast and kray ispolkoms; the same applies for interdepartmental councils for the introduction of the achievements of science and advanced experience in autonomous republics, krays and oblasts. Centers for the scientific organization of labor of a number of departments and institutes have been turned over to the RSFSR Ministry of Agriculture. The RSFSR Ministry of Agriculture has approved a consolidated plan for the introduction of the achievements of science, technology and advanced experience for 1976-1980. Consolidated plans of such introduction are also being formed in autonomous republics, krays and oblasts.

But the planning and organization of introduction of the achievements of science into agricultural production are in need of further improvement.

Many cases exist of a formal approach to the compilation of introduction plans--one that does not take into account realistic possibilities and the effectiveness of measures.

A need exists for improving the organization of introduction of scientific developments through the efforts of the scientific-research institutions themselves. The statute requires improvement on payment of bonuses to specialists of scientific-research institutions engaged in the introduction of scientific developments in agricultural production.

Gosplan RSFSR jointly with interested ministries and departments is developing proposals for introducing in 1980 progressive technologies of production of a number of agricultural crops in the RSFSR with an indication of the volume and regions of introduction and allocation of the necessary material resources.

The Department of Agriculture and Procurement of Gosplan RSFSR believes that improvement of planning and organization of the introduction of scientific developments in production is an important task of agricultural and planning organs, scientific-research institutions and all agricultural specialists and wishes to express its appreciation to the editorial board of the journal *SEL'SKAYA NOVA* for its timely and skilled presentation of this question on the pages of the journal. In its turn the Department of Agriculture and Procurement of Gosplan RSFSR will strengthen control over the fulfillment of the decrees of the RSFSR Council of Ministers aimed at further strengthening the ties of science with production and improving the organization of introduction of scientific-technical achievements and advanced experience into agricultural production.

by the chief academic secretary of the Presidium of VASKhNIL Academician
P.I. Subidko:

In the articles "Siberia: The Potential of Science" important questions are raised on improving the organization of research in the regional branches of VASKhNIL and strengthening the ties of science with production. Undoubtedly, the experience of conducting large-scale comprehensive researches on the agricultural development of the zone of the Baykal-Amur Main Line and introducing scientific developments for special-purpose programs deserves approval and support. Measures are being implemented for further improving the network of scientific institutions of Siberia and the Far East.

At the same time, deficiencies are to be found. Frequently scientific developments, approved by agricultural organs, are slow in being introduced, and that in a noncomprehensive way, into production. In this connection, the Siberian branch of VASKhNIL is developing a new statute on the manner of introducing completed scientific developments and going on to an introduction based on complex programs guaranteeing a given yield, productivity, labor productivity and so on. Improvement is also needed in the system of economic contractual relations of scientific institutions and agricultural organs. It is essential to go from contracts with individual organizations to the conclusion of such dealing with large problems with trusts, associations, oblast and rayon administrations of agriculture.

Work is being organized at the Siberian branch of VASKhNIL on special-purpose financing of complex programs. Such experience is being widely achieved in scientific-research work on the creation of its own food base in the zone of the Baykal-Amur Main Line. This experience will be widely disseminated in the development of other large complex programs.

But it should be noted that progress is still slow in the introduction of proposals for the agricultural development of the zone of the Baykal-Amur Main Line, especially in regard to conducting planning and research work for land-reclamation construction. Questions on setting up Kommunar Sovkhoz in Tyndinskiy Rayon, subsidiary farming of Yakutugol' Trust in Skovorodinskiy Rayon of Amurskaya Oblast and the opening up of new lands close to Neryungri, Tynda and in Severobaykal'skiy Rayon of Buryatskaya ASSR have been raised before the appropriate USSR and RSFSR ministries.

The Presidium of VASKhNIL believes that the publication of "Siberia: The Potential of Science" is very useful and will undoubtedly contribute to boosting the effectiveness of scientific researches and their introduction into production.

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STIMULATION OF HIGH-QUALITY GRAIN PRODUCTION URGED

Moscow *Ekonomika sel'skogo khozyaystva* in Russian No 6, Jun 80 pp 75-77

[Article by L. Korchaznikova, post-graduate student of the Moscow Agricultural Academy imeni K. A. Timiryazev: "Stimulating the Production of High-Quality Grain"]

[Text] Under the conditions of the intensification of agriculture price planning with a consideration of production quality can have a stimulating effect on production development.

At the present time a procurement price is established per unit of production of a certain base condition, i.e. of basic characteristics reflecting the average (typical) quality of agricultural products. When there are divergences from the base condition bonuses (deductions) in the procurement prices are foreseen.

The price of soft wheat takes into account such basic factors as the grain unit, moisture content, weed infestation, degree of infestation with the chinch bug, etc.

If the moisture content and weed admixture is increased 1 percent above the base quality, the receipt weight of the grain will drop by 1 percent. An increase or decrease in the grain unit of 10 grams as compared to the base condition is accompanied by bonuses or deductions in price at the rate of 0.1 percent. In addition to bonuses (deductions), both financial and in kind, for grain quality, enterprises provide payments to elevators for processing the grain: 0.4 percent for each percent of moisture above the base condition and 0.3 percent for each percent of weeds admixture. In accordance with the requirements of the state standard strong and hard wheats receive greater payments than softwheat.

The existing system of price formations should have interested enterprises in increasing the production of high-return varieties and types of wheat. Nevertheless, as an analysis has shown, the proportion of highly valuable varieties in grain procurement in Saratovskaya Oblast is decreasing from one year to the next.

There has been a drop in the procurement of strong and hard wheats. Moreover, in the amount that is procured there has been a drop in the proportion of high-return varieties of, for example, strong wheat, which was reimbursed with a 50-percent bonus, or of strong wheat belonging to the first or second classes.

Such a tendency has also been observed in other oblasts, republics and economic rayons where strong and hard wheats are cultivated. In our opinion, this is explained by the fact that procurement prices do not consider the consumer value of the grain.

The consumer value of our basic foodstuff, wheat, is determined by the amount of protein and gluten in the grain. A grouping of regular soft wheat according to protein content indicates that the existing procurement prices have been established without a consideration of the consumer value of wheat (Table 1).

Table 1
Cost of 1 Ton of Protein in the Grain of Common Soft Wheat
(According to Existing Procurement Prices)

Protein content, %	Cost of 1 Ton of Protein, rubles					
	1971	1973	1974	1976	1977	1978
Up to 13.0	732.09	757.95	778.63	751.00	729.82	741.21
13.0-14.0	669.94	685.76	681.50	688.28	713.19	698.89
14.1-15.0	640.10	640.27	640.27	626.68	629.65	635.08
15.1-16.0	615.47	606.86	595.41	590.70	602.19	612.17
Over 16.1	552.53	557.90	--	--	551.02	563.03

As we see from the table, the cost of 1 ton of protein in low-quality wheat is higher than in high-quality wheat.

The problem of increasing protein is important for raising the food resources of the country. The continued development of livestock farming also makes it imperative to deal with the problem of increasing protein in the feed ration.

The protein level of the grain determines the output of high-quality flour, the food and taste qualities of the bread, macaroni and other products.

Especially valuable are the physical properties of the protein complex in wheat, its capability to form gluten. It should be noted that existing procurement prices do not provide incentives for enterprises to raise this indicator of the consumer value of wheat. Thus, in the zone of Levoberezh'ye, Saratovskaya Oblast, where over 50 percent of the grain that is procured has a gluten content of 25-31 percent, the cost of 1 quintal of gluten is 326.56-399.22 rubles. In the zone of Pravoberezh'ye, where the gluten content fluctuates between 17 and 19 percent, its cost is 468.28-515.29 rubles per ton.

With the purpose of stimulating the production of high-gluten grain for strong varieties of wheat the state in 1968 introduced a 10-percent bonus over the procurement price of soft wheat if the gluten content reached 25-27 percent, 30-percent--if it reached 28-31 percent in strong wheat and 50-percent if the gluten content surpassed 32 percent.

Nevertheless, as an analysis showed, the introduction of bonuses for strong wheat has not stimulated an increase in the gluten content (Table 2).

Table 2
The Cost of 1 Ton of Gluten in Strong Wheat in
the Enterprises of Saratovskaya Oblast (According
to Existing Procurement Prices)

Protein content, %	Cost of 1 Ton of Gluten, Rubles					
	1971	1973	1974	1976	1977	1978
less than 25	417.91	422.85	484.34	395.44	432.54	419.35
25-27	397.99	385.38	399.48	385.65	388.69	391.21
28-31	411.77	409.48	431.79	429.71	426.68	469.35
over 32	426.71	420.39	--	435.94	433.15	481.92

In the grain group with a gluten content of less than 25 percent the cost of 1 ton of gluten is higher than in the group of wheat having a gluten content of 25-27 percent. In 1971 this difference equalled 19.22 rubles; in 1973--37.47 rubles; in 1974--84.86 rubles; in 1976--9.79 rubles; in 1977--43.85 rubles; in 1978--28.14 rubles. Consequently, a 10-percent increase over the price does not secure a higher cost of 1 ton of gluten in strong varieties of wheat; 30- and 50-percent additions to the price raise its cost, but this increase is insignificant and in some years--absent.

The grain of hard wheats is especially valuable. It is an irreplaceable raw material for the production of macaroni and other pressed goods. Nevertheless, there is insufficient stimulation for raising the gluten content of such valuable grain. In connection with this from year to year the volume of procurement of wheat with a large gluten content keeps decreasing.

The price must create a direct economic stimulus for the producer to increase the social usefulness of his product and its consumer value. For this reason in our opinion procurement prices should not be determined by a unit of physical weight but by a unit of consumer value of the product.

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PRIVATE AGRICULTURAL ENTERPRISES IN PSKOVSKAYA OBLAST DISCUSSED

Moscow SEL'SKAYA ZHIZN' in Russian 26 Jul 80 p 2

[Article by M. Zarayev, Pskovskaya Oblast: "For Themselves and for Sale"]

[Text] In Pskovskaya Oblast among the village soviets that have organized private enterprise with special effectiveness we find the Idritsa soviet of Sabezshskiy Rayon. In particular, the following indicator was mentioned: each cow in private ownership produces an average of 1,410 kilograms of milk sold to the state.

Honestly speaking, we thought that the villages are old and forested, with many discomforts. This would mean that there would be many pastures and haylands for private livestock. Thus the retirees living in the villages sell their surplus milk since they do not need very much for themselves.

I am sitting in the home of the Kaverznevs in the village of Zarodishche, which is located near the village of Idritsa. A family of five lives here. Anatoliy Arkad'yevich and Lyudmila Illarionovna are both sovkhos brigade leaders, he of a tractor brigade and she of a field brigade. There are two sons in grade school and the mother of Anatoliy Arkad'yevich, Anastasiya Sidorovna. Their cow is very productive. In the skilful hands and with the constant concern of Anastasiya Sidorovna it produces 20-22 liters of milk per day. There is enough for the children, and 2,800 kilograms are sold to the state at a price of 29 kopecks per liter.

The Kaverznevs also raise piglets and chickens. A calf weighing 200 kilograms was sold to a fattening sovkhos at a price of 1 ruble 30 kopecks per kilogram. Surplus potatoes comprised 400 kilograms. They were sold through a cooperative store at a rate of 15 kopecks per kilogram. Thus, the private enterprise brings the family about 1,200 rubles of income annually, which averages out to an extra 100 rubles per month.

How does the Kaverznev family manage to be so successful in its private enterprise while actively working in public enterprise? Of course, the private economy is not successful only through the efforts of the mother. Anatoliy Arkad'yevich himself has golden hands and his wife is an energetic and hard-working person. There is also another important circumstance that should be mentioned--help from various sides by the Idritskiy Sovkhos-Technical School, where both brigade leaders work.

Let's see, for example, the kind of aid that is given in raising a piglet. The Kaverznevs did not acquire the piglet at market. The enterprise has a small reproduction farm which supplies the sovkhos workers with piglets.

What if a young family has decided to maintain a cow? This desire is fully supported in the sovkhos. The enterprise sells its workers calves at about half price. It is to be used for the good of the workers and society.

Of course, the degree of labor contributions into public production is considered when distributing calves. Good, business-like workers are first to receive the animals. In any case, a conscientious machine operator, milkmaid or field worker such as the Kaverznevs can acquire a piglet or calf at a relatively low price from the enterprise. If the cow or hog becomes ill the veterinarian will always treat it. He will give professional advice about how best to feed and maintain the livestock. The sovkhos herd also maintains a bull for use with cows in private ownership.

There are also no difficulties in acquiring poultry. There is an incubation station in the neighboring rayon. The village soviet determines the needs of the population, and a truck with chicks delivers to villages at a prearranged time. In this way each worker can buy the number of ducklings and chicks he needs.

There is a specific order as regards feed. At the beginning of the pasture period all cow owners are allocated grazing land. In Zarodishche where the Kaverznevs live the natural pastures are not good and for this reason plots of land with sown hay are utilized.

The situation with haylands is more difficult. There is a shortage of coarse fodder in the sovkhos. There is also a shortage of workers to procure it from all types of unsuitable lands such as ravines, lowlands and forest meadows, which hay-harvesting technology cannot reach. For this reason such lands, of which there are a great many, are allocated for manual mowing under the condition that a portion of the cut hay is given to the sovkhos and a part remains with the person who cut it. The Kaverznevs have also put a portion of their private plot into clover. As a result, the family procured about 5 tons of hay for the winter.

In addition, Anatoliy Arkad'yevich, like other machine operators who participate in harvesting operations, has received grain under competition conditions. His share was 250 kilograms. This is not a great deal. The productivity of sovkhos fields was low last year. But the same amount of mixed fodder was issued through the consumers' cooperative union for the milk they sold. A total of half a ton was poured into the family granary. This is not very much, but there are still both feed beets and potatoes that will be eaten by piglets and cows. Finally, there are family table scraps. As a result the rations are not bad ones.

An important task is the cultivation of the private plot. During the spring tractors are usually employed, and even so it is difficult to maneuver a large

machine on a small plot. The sovkhos has 37 horses which are used basically for consumer needs such as shipping bread into outlying villages and for collecting milk. These horses are allocated for plowing private plots. In some cases if retirees are unable to work a plow the cultivation is performed by a tractor. Each worker receives limitless supplies of manure from sovkhos farms for fertilizing the garden.

Of course, labor expenditures in private farming and animal husbandry are still great. Agricultural machine building is in debt before the peasant household. Nevertheless, the sovkhos does everything possible to create conditions for people in which they could coordinate the effective management of personal plots with full-value work in public production.

By far not all peasant households are so commodity oriented as the Kaverznevs. In comparison we have the Grushinskiy family, two generations of whom are actively at work in the sovkhos. The father and two sons are machine operators and the mother and daughter-in-law are calf-herds. Vladimir Mefod'yevich and Antonina Ivanovna have a well-developed personal plot--a cow with a calf, piglets, chickens, a fruit orchard and a garden. In other words they have everything that is customary in village life. There are enough people to look after the enterprise, but there are also enough people to consume all of the products. In one house there are five people and in the neighboring house there are another three--the eldest son with his family (he and his wife raise only one piglet). Although the cow of Antonina Ivanova produces up to 20 liters of milk per day in the summer, the family uses it all up. Nothing is left to sell.

However, this circumstance is in no way reflected in the degree of help the family receives from the sovkhos. The family receives everything as prescribed--haylands, grain, veterinary consultations.

"How could we do otherwise?" says the director of the Idritskiy Sovkhos-Technical School, Petr Ivanovich Shtylun, "Even if the family does not sell anything to the state, it is almost totally self-sufficient in the supply of foodstuffs for itself--milk, meat, potatoes and vegetables--and does not have to buy them in the store. Helping them to obtain all that is necessary is an important state goal."

Petr Ivanovich has a complicated job. He is responsible for the largest dairy complex in the oblast with 800 cows as well as for the work of the zooveterinary technical school, which annually graduates several hundred young specialists. Nevertheless, his concern for the peasant's private enterprise is constant and unfailing. The distribution of meadow lands and young animals--all of this is discussed publicly with the participation of the aktiv and in close contact with the village soviet. The director understands that there are important questions of the collective's life involved in what would seem to be purely everyday needs of the population. This approach to the situation is supported by the experience of party work, to which Shtylun devoted more than one year of his life.

"We need more families like the Grushinskiys and the Kaverznevs!" says the director, "The status of the sovkhos would be better."

Unfortunately, most of the residents of surrounding villages are retirees or married couples who have been together for 50 years and whose children have moved to the cities. The sovkhos is building a residential complex near the animal husbandry complex. It will have one or two family houses and is earmarked for people moving from small villages and for young families. They will be given every opportunity to manage a private plot. This, says Shtylun, is an important factor in establishing social equality in the villages of the Non-Chernozem Zone.

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